

My general impression is that mixed flocks are more common on the Rio de Espejo here than near Quito, but probably somewhat less common than in Chiriqui.

Species include Black and White Warbler, Slate-throated Redstart, White-speckled Redstart, *M. cyanocephala*, probably a variety of *Tangaras* (altho I am not sure that I have yet seen a flock with the latter that did not also include Diglossini) plus a variety of flycatchers, hummingbirds, and fernariids (s.l.). Possibly also PCBT's and squirrels.

SEE ALSO NOTES ON MIXED DIGLOSSINI

September 19, 1964
Teleferico #1 & above

After having seen a few more mixed flocks, I have come to a few tentative conclusions about them.

There are really 2 main types (or sub-types) here. Mixed flocks and true flocks.

Mixed flocks include the "Quito *Basileuterus*", the "gray-headed *Basileuterus*-type" (No. IX on list), the two *Atlapetes*, Andean Sparrows, as well as various fernariids & hummingbirds. This is the type of mixed flock most often joined by adult ♂ Albes (and Buff-throats).

Within such flocks, the 2 *Basileuterus* types seem to be leaders.

while the PL *Atlapetes* is definitely a follower (in much the same way as the Yellow-throats in Chiriquí).

Tree flocks include Black and White Warblers and other wintering N. American warblers, *Thraupis yanocephala*, various Tanager-like tanagers (at lower altitudes), Rose-throated and White-spectacled Redstarts (the White-spectacled may be a bird of relatively high altitudes, just like the Collared in Chiriquí), as well as various furnariids and hummingbirds (presumably not always the same species as with the best flocks).

This is the type of flock most often joined by *cyanea*.

I don't know who are the followers and who are the leaders in this type of flock.

I also don't know if the two types of flocks coalesce or not.

The role of BCBT's may be significant in this connection. They seem to be primarily tree flock birds, but they may come relatively low more frequently than most of the other members of the tree flocks. But it still remains to be proved that the local BCBT's are nuclear (or even regular members of mixed flocks) !!!

September 21, 1967
Paramo La Negra

Saw an interesting flock this morning. 7:00 a.m. 9350 ft. In alpine scrub, just below paramo itself. Nucleus composed of 3 PL *Atlapetes* and 1 Yellow-belly *Poecilothraupis*, who stayed together as long as I watched the flock (at least 3 mins.). This

glor
nucleus briefly joined by single Andean Sparrow and single gloriosa.

September 22, 1962
Road to La Azulita

See today's notes on Chlorospingus & Atlapetes

I am now sure that the WM Atlapetes is not associated with mixed flocks nearly as frequently as is the PL Atlapetes.

I think the local BCBT's are neither passive nuclear nor gregarious among themselves.

September 24, 1962
Paraiso La Negra

See today's notes on Mixed Diglossini!

Two aspects of the mixed flocks here seem to be most significant:

(1) Mixed flocks are common here (in spite of the fact this seems to be the height of the breeding season). This would suggest that the environment here is "unovercrowded" in much the same way as Central America (if this is not actually part of the Central American region).

(2) Certain species which show specialized inter-specific reactions facilitating the formation of mixed flocks do not seem to do so here (i.e. the BCBT, the BT?). Certain species which do not show any signs of inter-specific gregariousness near Quito do

(4)

Gen seem to do so here (i.e. the common Bananquitos, several species of Diglossa, *Thraupis cyanocephala*). This might suggest that, although the habit of associating in mixed flocks may help a species to spread, it is often disadvantageous after the species has occupied a new area. This, in turn, would suggest that a species will usually have to spread to new areas in a hurry, once it has developed the habit of associating in mixed flocks, before the habit is selected against and the chance to spread is lost.

September 26, 1962
Paramo La Negra

See today's notes on Mixed Diglossini

September 29, 1962
Above Quasca

Ca. 9:15 this morning I came across a large mixed flock. The most brilliantly colored I have ever seen. Including bright red, orange, yellow, white, gray, black, brown and blue!

The only colors missing were greens, including olive.

The birds definitely identified as being associated with this flock were: 3 inds. of one Atlapetes-like species (no. ~~XX~~); a pair of another undoubted Atlapetes species (no. ~~XIV~~); a pair of *Vireo bellii*; a pair of brilliant blue and orange "tanager" (no. ~~XVI~~).

Feb 32 ✓
Ruf 32 ✓
a pair of Lafs, 1 or 2 Rufs (if 2, they were a pair), and one
swan. The flock also included at least 1 blue and yellow
bird which was probably a Dabunia. Probably also included
3 a pair of PL Attapetes.

Feb 32 ✓
Ruf 32 ✓
This flock was moving up hill, along both sides of the
automobile road. Finches and tanagers apparently leading. As far as
I could tell, the presumed Dabunia, the Attapetes XIV, the Fin-
bellies, the Blue & Orange Tanager XVI, (and the PL Attapetes, if
present) were in the vanguard, apparently leap-frogging over
one another at random. Also flying back & forth across road.
The presumed Attapetes, no. XV, were definitely behind the van-
guard most of the time. The Lafs were around the XV's and/or
the Rufs most of the time. They certainly stayed with the flock
for at least several minutes. The Rufs were always at the rear.
They definitely stayed with the flock as long as I could see it.

All the members of the vanguard moved consistently in
the same direction. And the other members of the flock were de-
finitely following at all times. This was a very well integrated
flock.

The vegetation through which the flock was moving
was alpine scrub. Very thick. Several hundred feet below
the nearest edge of Páramo. Scrub possibly a little drier than
higher scrub. Contained few or no tubular flowers. All the me-
mbers of the flock seemed to be feeding on insects. Not fly catch-
ing. Picking insects off leaves, probing crevices, etc.

The Finbellies, the XVI's, and the presumed Dabunia type
ranged from the tops of small trees (possibly 20 ft. above ground)

(6)

to low scrub only a few feet above ground. Probably usually in middle. The *Atlapetes* types ranged from approximately 5 ft to only a few inches above ground, in a variety of bushes and shrubs. The *diglossini* did much the same thing, except that they never went so low (probably never lower than $1\frac{1}{2}$ ft. above ground).

This flock was not very noisy. All or almost all the birds uttered "CN"s. A great variety of "Trit"s. The only species known to have "sung" in the flock were the Fire bellies and *Atlapetes* XIV. The Fire bellies uttered several phrases, at long intervals. Largely or completely composed of "Ja-auh" type notes. The XIV's also sang at long intervals. Their loud clear, wren-like, song (possibly being used as "greeting" when one bird re-joined its mate).

A *Dabuna* certainly sang, once (several phrases), while I was watching the flock; but I don't know if it was the bird that had been in the flock (if there was one), or, if so, if it was still in the flock when it sang.

The most peculiar feature of the flock was that it seemed to be largely or completely composed of followers. No leaders. No passive nuclear species. This is peculiar. It might seem to contradict my suggestion that mixed flocks develop from an original association between a passive nuclear species and one or more active nuclear or attendant species. But I wonder if this flock might represent an early stage in the degeneration of an "association" (in process of being transformed from something like the mixed flocks near Mérida to the group of un-associated spe

ues near Quito)? If it is sometimes advantageous for a previously "allo-gregarious" species to become non-allo-gregarious, after having occupied a new area; then it is logical to suppose that selection pressure would affect passive nuclear-species more strongly (and probably earlier) than active nuclear-species. Active species can regulate their associations with other species more easily than can passive species. So one might expect passive nuclear-species to become non-allo-gregarious before their associated active nuclear and attendant species. The latter would then be in state comparable to that of a mature stranger fig after its original support has disappeared. The flock seen this morning may represent this hypothetical stage.

(If one wanted to select the local species which once played the passive nuclear role in this particular association — there is always Bailetherus nigrocapitatus available.)

I lost sight of this flock after approximately 20 minutes when a parrot-bird appeared and asked loud questions. I think the flock turned at right angles, leaving the road, and continuing uphill more directly.

September 30, 1962
Above Quasca

This morning I came across a mixed flock twice. In exactly the same area as yesterday's flock. Obviously essentially the "same" flock both times today and yesterday.

Flock first seen 7:35 a.m. At this time, I saw a pair of

Ruf
fith
Jaf
PR Antapetes, ^{III-3} 3 "Attapetes" ^{IV} IV, 2 Ruf, and 1 fith all more or less together. Soon joined by 1 Jaf.

Just after first seeing flock, I heard a fith-belly "Ja-ah" pattern about 20 yds ahead of the other birds. If this fith-belly (or, more probably, pair of fith-bellies) was really associated with the other birds, then the latter were following the former.

The PR's were certainly leading the other birds. They were quite noisy, uttering lots of "greeting" vocalizations.

Ruf
fith
Jaf
The other 4 species seemed to be following the PR's, without ranging themselves in any stereotyped order. All of them were silent or uttered only weak "CN"s.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

All the visible birds of the flock moved more or less steadily in the same direction. In low scrub to small trees, usually fairly low.

Jaf 38
Most of this flock eventually went down hill. But not the Jaf or the fith-belly (us). I heard both fith-belly and Jaf song at approximately the level the flock had been after the flock had left. The Jaf and fith-belly (us) were not together when they sang, and did not sing at the same time.

III 10
at 8:35. I came across what appeared to be scattered remnants of the same flock. First I saw an apparently single "Blue & Orange" Tanager (no. XVI). All it did was utter "Trit" CN's. Moving uphill thru tops of small trees. Quickly disappeared. A few moments later, I heard fith-belly song from the approximate area to which Blue and Orange had gone. Then heard 1 brief

14 burst of ^{W3} Baileymorus nigrocristatus song, from area near me, considerable down hill from where Blue & Orange and Fire-bellies ^{W4} is presumably were. Then a pair of Rufes appeared, moving steadily uphill, in the presumed direction of the Fire-bellies. Paused by nigrocristatus area, but I don't think they were aware of the latter. Went past me to feed in tree up hill. One or both Rufes did a lot of singing. Then they flew back down hill, in the direction from which they had come.

Ruf All the time the Rufes were around, the nigrocristatus (there were 2 of them, as I saw at this point) were absolutely silent. As soon as the Rufes had gone, they uttered quite a lot of loud songs and moved about quite actively. They were much more conspicuous than than any nigrocristatus I have seen around here at any other time!

16 The nigrocristatus gradually quietened or moved away (the former I think). Then a few minutes later I heard a burst of ^{W5} PR song from the area toward which the Rufes had gone earlier!

All this would suggest that I saw the flock splitting. The Fire-bellies and the Blue & Orange went up hill. The PR Atlapetes stayed down hill, making no effort to follow the tanagers. The Rufes started to follow the tanagers, but then went back to re-join the RP's. The fitts and no. 21's presumably stayed with the RP's all the time.

This would suggest that the large mixed flocks around here are composed of 2 sub-groups: (1) tanagers, i.e. the Fire-belly, the Blue & Orange, and, possibly, Dulcinea; (2) The Atla

16

Gen piter-type finches and the Digenini. The two sub-groups only come together because RP's tend to follow the tanagers.

The roles of the species would seem to be as follows:

I. B. nigrocrinitatus. The local individuals of this species are obviously trying to keep out of mixed flocks. It is most significant that the birds observed today were right in the middle, between the two halves of the split flock, but only became conspicuous after the two halves were far enough apart that they themselves (the nigrocrinitatus) were essentially alone.

NOTE. The nigrocrinitatus near Quito could afford to be noisy because no one joined them. The nigrocrinitatus near Mirinda apparently could afford to be noisy because they didn't mind being joined.

fitti II The fitti and the XI's seem to be regular followers of the PR's. Probably regular attendants, rather than active nuclears, as they are so silent while with flock.

Ruf
Jab III The Rufts are probably occasional attendants in the PR sub-group flocks. Possibly regular. The Laps are certainly occasional attendants in the same flocks. IV The White-bearded Flycatchers (no. XVII) seem to be regular attendants upon any kind of flock, both mixed and previously non-mixed (e.g. flocks of Andean Sparrows), that enter their own territories.

I The Fire-belly may be an "occasional passive nuclear" species.

us", being followed, at least by RP's, whenever possible or convenient. For-birds are not, however, usually associated with mixed flocks. SEE TODAY'S NOTES ON POECILETHRA UPIS.

(The For-birds might be anything. Perhaps the same as the For-birds. Perhaps active nuclear or attendant)

VI. The PR is the great problem. Certainly functioning as passive nuclear here and now. (The fact that its song is so similar to those of the diglossines might even suggest that it is highly specialized, or at least specializing, to enhance its passive nuclear capabilities.) But comparative data would suggest that it was once an attendant species or (possibly subsequently) an active nuclear species. Its position here is probably very similar to what the position of the Yellow-thrigh would be in Chiriqui if the BCBT dropped out of the mixed montane association. It would be interesting to see if the PR reverted to another status, here, if a more typical passive nuclear (i.e. "auto" - gregarious) species appeared.

(The status of the PL's here is still quite obscure.)

October 23, 1962
Mountain above Bagota

Gen

Watched birds here both in morning and afternoon.
Surprisingly few mixed flocks. In spite of the fact that Laps, Ruf, Humers, Cys, For-birds, PL Attapetes, PR Attapetes,

Dubonias, B. nigrocapitata, and White-bellied Flycatcher (XVII) all common area (Species checked seem to be common)

The scarcity of mixed flocks here may be due to the fact that the PR Attapetes seem to be rare

This might suggest that the absence of mixed flocks in the Quito region may be due to the absence of nuclear species — not to a general reduction of inter-specific gregarious tendencies in other species.

Hummer

The only definite mixed flock seen today was formed when a single Hummer joined a single, silent, PR Attapetes (see today's notes on mixed Diglossini). The fact that PR was silent might suggest that its mere appearance, per se, is attractive.

I heard PL Attapetes at dawn, but never saw any birds. I am beginning to feel fairly certain that this species does not usually play a significant role in mixed flocks here.

OUT OF SEQUENCE

October 21, 1962

Central Andes Boqueron de Palmitas Boqueron
Mr. Medellin

6:05 a.m. 7500 ft. Edge of thicket along stream, bordering on fairly open grassland scattered with small trees. Some mixed flock including 3 or 4 green Tanageras (XIX), one Myiophobus cyanocephala, one pair Blue and black Tanageras, one slate-throated Redstart, hummingbirds, probably others. Green Tanageras quite noisy, possibly or probably purely nuclear.
1 Th. cyanocephala s —————> green Tanager

1 pr. Blue and Black j —————>

One of the Blue and Black's feeds close beside unknown green Tanager. No obvious reaction between the two. All the members of the flock except the Blue Throated Redstart spend most of their time feeding on berries in small trees. Redstart picks and eats off leaves.

7.00 a.m. Come across another mixed flock; approximately 17700 ft.; in trees and berries in open area. Includes one Tanager no. IV, 1 Black and white Warbler; other H. American warblers (5); one Andean Sparrow; others. The warblers and tanager feed in low trees. The sparrow-hops (presumably feeds) in low scrub. The Tanager flies off in a minute or so. Not followed

8.30 a.m. Another area. Wetter machine, with dense vegetation 17525 ft. Come across another mixed flock including 2 BYB Tanagers (XVIII), one Yellow-faced Redstart (XX), one Black and white Warbler, one Cy, one Blue-wing or Golden-wing Warbler (whichever has facial mark), one tree wiper, at least one thrush, one Blackbirdman or Magnolia Warbler (whichever has white on cheeks), miscellaneous hummingbirds, one Myiophobus cyanocephalus, one BCBT (different subspecies from Merula — crown not very dark or distinct, white eye patch small), one Atlapetes rufinucha (different subspecies from Quito — white patch on wings, rufous of crown particularly broad toward rear).

BYB's appear to be leaders of flock. Something in the flock rings quite frequently — and I think that it must be our

on both of the BYB's

BCBT silent or, at least, very quiet. Up to 1000 ft. front of flock.

All other species silent or utter only "CN"s

Myiolorus appears to be following tanagers. Other warblers certainly following group as a whole.

1 Cy f —————> Myiolorus.

Cy feeds in low shrubbery (under trees). Both on flowers and insects. All other members of flock feed both in trees and scrub (with possible exception of the A. rufinucha, which may have remained low).

When flock was first seen, it was moving uphill. Then turned and went down hill, retracing its previous course.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

October 24, 1962

Into above Pagoda

Nothing in same area yesterday.

PR Atlapetes do occur here. Very noisy at dawn (see today's notes on genus). Starting to move around 6:15 a.m. (approx).

Uttering lots of warbling "greeting" patterns. Definitely followed by single foliage gleaner - like Furnariid. Occasionally associated with N. American warblers. But that is all!

B. maculatus in area certainly do not associate with PR's. But they did once become particularly vocal when PR's were very noisy.

7:25 am. The mixed flock 200 ft. a PR is a Firebelly
2 Ruf. 100 ft. 100 ft.



But I must say the flock seems to have moved on.

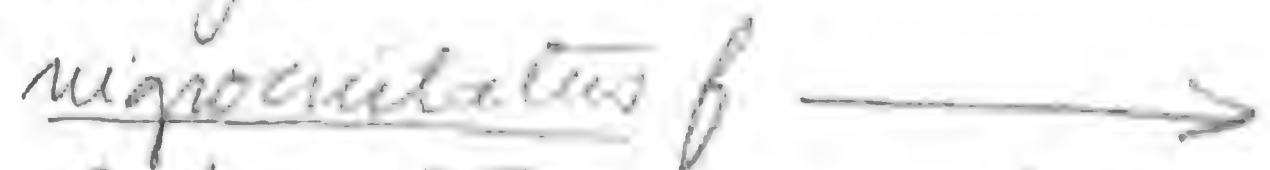
For some time a few minutes later. Some ingredients also
1 or more for example 1st group in mixed flock.

There is also a group of 2 B. microcratus near edge
of this flock. Very noisy. But they are apparently moving in opposite
direction from the rest of the flock.

Pup feeding on insects in leaves and twigs. Also feeding in
red deep colored flowers. Also heard to be cutting.

A pair of Paps (definitely identified) flies
past flock, going very close to one Ruf, without stopping 7:30 am

Will! Will! The B. microcratus definitely are associated with this flock



The PR's certainly seem to be passive nuclear here. Followed
closely by Ruf. Other species (with possible exception of the form
amid) less closely associated

This flock quite long sustained. But Firebellies seem
to have gone long ago. They are obviously too mobile to stay with
any flock steadily for any great length of time.

7:45. Following trail of what may be same flock, going
down hill. Hear PR's. Also Firebellies. Firebellies much further
on down hill, possibly "leading". Then suddenly come across 3 or 4

Cys. Flitting about very rapidly, with lots & lots of ... I think
 that this must have been a ... dispute. ...
 when 1 pair of Cys tried to follow back into tenton. ...
 pair of Cys. After a few minutes Cys about up, ... leave
 Then I see pair of Rufs right where Cys used to be. Silent. ...
 down hill in direction in which I think PR's and ...
 Then a few minutes later, ... PR's again, near same area.
 These birds moving up hill. ... But apparently alone. Different
 birds from PR's with flock ???

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

9:15 am. see flock of 3 ... PR's, others
 1 PR f —————> ...

As a result of all my observations of Coors in different
 areas, it seems obvious that they must have relatively very
 large tentones — like Cowbird spp.

This afternoon I saw a single Diglossa which was
 either a ... or a ... in the garden of the Bolivar Museum
 here in town. Altitude 8625 ft.

October 25, 1962
 Agua Bonita

6:20. see pair of Atlapetes torquatus & B. nigrocristatus ...
 ... nigrocristatus f —————> torquatus. ...
 lots of "feet"s. Warblers sing once or twice. I don't think that the

Two species still together long

5:30 a.m. 7700 ft. Come across large mixed flock, in and among all sorts of things, e.g. at least 1 Yellow-faced Redstart, at least 2 or 3 BCBT's, at least 15 ET (no white visible around eyes in any glances), at least two of the local Orestia hypoleuca (greenish, same as in Florida, dark rich chestnut under wings), lots of fat warblers and hummingbirds. Flock scattered all birds from 40 ft above ground on trees to ground itself. Flycatchers & Redstart on outside birds group, flycatching. Couldn't tell who was leading.

(After looking at skins in the University collection this afternoon, I am sure that this flock also included 2 Cnemoscopus rubrostris. It may also have included 1 or more Hemiprocne atricapilla.)

Somewhat later in the morning, at slightly higher elevations, I saw a couple of loose associations between Firebellies and BCBT's. Probably accompanied by other species as well. 1 BCBT f —————> Firebelly.

10:20 a.m. Another place. 7950 ft elevation. See mixed flock of 2 BCBT's, 1 Yellow-faced Redstart, 2 B. nigriceps, and probably others. In moderately low shrubbery on edge of cliff. BCBT's in lead. 1 B. nigriceps f —————> Redstart flycatching around BCBT's.

Sept 20, 1962
 15

6:25 a.m. 8350 ft. Mixed flock seen in Can. ...
 of all of the components, except 1 or 2 Yellow-bellied Nuthatches.
 Black-capped included 1 or 2 copper throats. ... also a
 Dendroica ... on the ... of the group almost all
 the time.

The larger mixed flocks around here seem to be ...
 & "purposeful" as the higher altitude flocks in Chiriqui.

6:50 a.m. Another large mixed flock ...
 I failed to identify most of components. But definitely ...
 or more Hemispingus atropileus, 1 or more B. nigrocrinitatus, 1 or
 more Trochilurus, Junco ... The Hemispingus seemed to be lead-
 ing at least part of the time. The B. nigrocrinitatus was certainly
 following part of the time.

Perhaps the reason the B. nigrocrinitatus near Huerfano
 Guana do not join mixed flocks is that there are no suitable
 species of Chlorospingus, Hemispingus, or Cnemidophorus around ...
 Some B. nigrocrinitatus here and above Bagota may also join other
 flocks, not containing any "bush-tanagers", simply because
 they have "gotten into the habit" of joining flocks because and
 when bush-tanagers are (usually) present.

Working in mountains above Bagota this afternoon

5:20 p.m. 9800 ft. Come across 1 or 2 B. nigrocrinitatus.
 Many songs & CN's. But not associated with other species.

NOTE: All the most of the B. nigrocrinitatus observed were

The mixed flocks in the Agua Bonita region have been moderate
 by now. It is possible that their songs and calls have been pro-
 duced by my presence.

At 10:00 AM I went to the water
 and saw the birds in the water. Individual birds
 were seen to be quite active. Several Redstarts were
 also present.

October 27, 1962
 La Laguna Bogota

Absolutely no trace of mixed flocks here today.
 (See also today's notes on Diglossini). In spite of the fact that
 there were lots of *B. superciliosus*, *Arremonops*, and *Diglossini*
 around. Due to absence of *Atlapetes pallidimaculata* (as well as
 "orch-tanagers" ??? Or simply due to the fact that this area
 is "optimal" for the local species ??? (The diglossini, at least,
 were more common here than anywhere else in the region - with
 the possible exception of the La Laguna area above Quasca)

October 28, 1962
 La Aguadita

Ca 6:30 AM. Mixed flocks in trees along edge of road. Flocks
 on either side. Quite a lot of birds, including 1 *Cyanoccephalus*, 1 *Formi-*
mer *Tanager*, various N. American warblers, several *Tanagers* (un-
 identified), others. Flocks as a whole quiet. Only a few "CN"s. Birds

feeding from 15 to 30 ft above ground agaveopsis 20-30 m, not
the leader 6200 ft.

17 33 1/2 Little PT (!) and sparks in trees, also
5825 ft. Further in mixed flocks. Also pair Black-throated Blue
Warblers (One of them is singing frequently). Then we saw a pair of
Throat (possibly one of the same feeding alone). Also Brown-capped
Vireo alone. Feeding in some trees near Black-throated Blue Warblers.

8.15. Head & PT surgery in top of encephalon also apparently done.

E. Smith 30 Nov.
Barnesville, Md.
Western Union

7:40. Edge of wet forest. 6800 ft. See mixed flock of 2 cyanocephala, 1 Yellow-headed Tanager (S. xanthocephala), 2 ♀ Gold finches, possibly others. In trees about 10-20 ft above ground. Generally silent.

Ca 9.45 a.m. 6750 ft. In almost same area where mixed flock cited above was seen (and exactly same area where pair of Ind. ironis anales was seen earlier this morning). see a mixed flock which includes a pair of Tanager calenduloides and some other unidentified birds. (The identification of this tanager is certainly correct).

October 31, 1962
Boqueron de Jillo

7:00 am. Pallets of wet foam. Between 6750-6775 ft. Approx.

see the other 5 or 6. Heinrich's thrushes & J. caeruleus yesterday
see a small flock of "dark tanagers" type. Apparently with
rest being disturbed. quercus

7:30 am. quercus - see a small flock. quercus and
other quercus not a water, but the quercus

Mr. Medellen

November 1, 1962
Santa Elena
Central Andes

6:00 am 8250 ft. Edge of light forest. See mixed flock includ-
ing J. nanus, others, feeding in trees about 20 ft above ground.
One of the others certainly BCBT. Leds breaks up fairly soon. Blue
and black's are the leaders (if any)

6:05. Flying higher. In light forest. See pair of BYB Compso-
coras and at least 1 cyanocephala feeding in top some small tree.
Almost certainly others in same flock. cyanocephala flies off. BYB(s)
do not follow. BYB(s) certainly not leaders of this flock.

6:10 am Another area 8250 ft. Come across an enormous
flock. Including, among others, at least three "BCBT"s, 1 pair BYB's,
at least 1 Blue and Black, 1 adult J. heinei, 1 Cy, 1 Atlapetes
rufinucha, lots of N. American warblers, 1 pair funarids

1 BYB - Blue and black. Otherwise flock rather
diffuse and un-coordinated. The A. rufinucha was in front (not nec-
essarily in lead I suppose). Birds going in all directions. Flock as a
whole not moving forward very much. Flock generally very quiet.
Moderate no. of "CN"s. Occasional brief bursts of song by 1 or more of

eyes (unfamiliar). Very different from mixed flocks in
birds also always scattered over wide area

Vegetation here is low. Trees are mostly less than
10 ft above ground (some up to 15 ft above ground).
Number of flocks ranging from top of small tree (10 ft
10 ft above ground) to ground itself (as only a few are above it).

Blue & Blacks may form a flock, but prob-
ably only in same way as *Geothlypis trichas*. They are more or less
mixed all or most of the time. Probable some flocks quite separate.

"BCBT" is here in some way, but not related.
Cap darkest around eye & along lower border. Head almost entirely
individual. Very patch white behind eye. Eye itself light.

Come across some flock only a few feet from the ground. Can
see only birds in trees. BYB's, Blue and Blacks, *S. harrisi*, B. BT's,
warblers, all flitting about in disorganized manner. Still very quiet
on the whole. There are at least three Blue and Blacks in group.
Also at least one Slate-throated Redstart. These are of Blue and
Blacks not being followed. 1 Blue and Black f ———→ "BCBT".

Flock still around 7:30

Moving on myself

(ADDITION: *rufinucha* with this flock had white wing spot.

7:35 8400 ft. Similar environment. Come across what is
most certainly another flock. Includes miscellaneous N. American war-
blers; pair of Slate-throats; at least 3 Blue and Blacks, including one
juvenile; 1 Cy, at least 2 BCBT's; one or two pairs of Thrushes (usu-
ally slatey, with reddish bill, legs, and eye ring); at least 3 *Atlapetes*
rufinucha (one pair together, one bird separate); 1 *cyanocephala*.

When first seen, one pair of Thrushes was in front. There were

found by one of them. Blue & Black, 1 *cyanocephala* →
 These birds were on the 1st American warblers f →
 BUT of → Blue & Black f → pair of wife
 male f → male Blue & Black f → Cy f →
 (V) single *cyanocephala* f → Blue & Black f → Cy & Cy
 (V) f → Blue & Black f → also have been a pair of firm
 (V) birds following a pair of 1st. When flock moves on, a pair of them
 but 1st behind. I don't know if there are the same birds that we
 saw first at first or not.

The various Blue & Black in flocks were not grouped together.
 Apparently divided into 2 small groups, seldom or never together.

All birds in flock apparently usually or always feeding on insects,
 except Cy which feeds on up-shaped pink flowers. All birds in
 trees and bushes, 1 to 20 ft above ground.

(V) When flock is first seen it is moving up hill fairly steadily looking
 very quite coherent. But only a couple of minutes after it passes on it
 part of it — at least thrushes, Blue & Black, & Cy) is back, front
 going down hill, then just milling about.

All birds very silent, except for juvenile Blue & Black which
 utters "treet" is nearly constantly. Obviously begging.

Actually, I think there are at least two juvenile Blue & Black
 around.

Flock still here 8:30.

This is certainly not the same as the large flock seen earlier.
 No trace of BYB's or beaver. I shall call this big flock "II", and the
 earlier one "I".

Moving on myself 8:30.

It certainly looks as if the breeding season of the *republicana* is over here now, or at least, getting on to the end.

Are the Blue and Black birds more numerous here than the *republicana*? Is this an exception to my general rule? (See difference & problem here.)

Blue is certainly the dominant color of the birds here. It is the most important color.

Could the blue color of Cy be significant? (See page 10) stating its association with mixed flocks? (See page 10)

Come back to I-flock area 8:50. No flock seen. Perhaps more probably, dispersed. Hummingbirds still around. Can also hear Blue & Black begging notes somewhere around. As I approached, I also heard Cy songs some distance away. As if Cy had begun to sing after leaving, or being left by, flock.

Then see a couple of Black-burnian warblers in area (Blackburnian was the common warbler in mixed flocks today). Good heavens! At least part of flock is still here. Just see the pair of *republicana* again.

Cy stopped singing long ago.

Moving on again 9:00 a.m.

As I leave see a couple of Blue & Black feeding in tree. Rather to one side of other birds. Not in direction in which *republicana* were moving.

Back to I area 9:04. Birds apparently gone.

9:45. New area. Far from old. 8000 ft. Tents of forest along ravine. Mixed flock including at least one Blue & Black, a pair of Yellow-faced Redstarts, 1 Cy, 2 *republicana*, thrushes, others. *Modiola*

My worst fault. But perhaps only as reaction to the
fact that I was at one time I knew something on business
of going away. Sayed from Powers

The Santa Fe Register.

Flock also includes at least one juvenile Blue + Black, and several *Geothlypis* as well as *Ammodramus*. Also at least one flat-throated

There must be at least one thrasher in the flock. It is the cha-
rty of the group as in the flock. All together. Possibly or probably
leader.

Also at least one flycatcher; with group
inimicas are more or less on catbirds in covered scrub

Mr. Cook

November 2, 1952
Mares
Western Andes

6:30-9:15 am 6200-6300 ft. Paley of wet forest
Lots and lots of birds over. So thick that it is difficult to discern
single flocks from general background.

Have seen 2 Koles including Tungara xanthocephala and J
no. XXVI. 1 XXVI \longrightarrow xanthocephala

BYB's have not been in their Tangara flocks. SEE TODAY'S
NOTES ON COMPSOCOMA

There is at least 1 pair of flats throats around. Not associated with other species.

November 20
H
W

6:00 a.m. 8:00 ft. A few birds up, very few down. It is impossible to reach. But a few of the birds in small trees & tangle of vines on edge of wet mountain forest.

Finally give up waiting and start to go up hill. Heavy rain continues - heavy. Do not get all the way up, but reach region where forest starts to give way to lower but very dense scrub (not real Paramo). Probably at least 9000 ft. Possibly more. Then down again. Returning to car at 7:00 a.m. During this whole trip, observational conditions were abominable; but I did notice the following groups, near the upper edge of the real forest:

I. A group composed of at least one tanager which appeared to be a subspecies of Eudisornis rufivertex (orange spot on crown, grayish black above - presumably blue affected by rain, and extremely rufous below); two Yellow-faced Redstarts; one Yellow-belly; several furnariids; possibly others. Furnariids f —→ "rufivertex". This flock was quite noisy. Several bursts of Atlapetes-like warbling phrases.

II. A group of two or three Atlapetes-like birds. Possibly PL's. Quiet. Nothing more than CN's. In bushes & small trees.

III. A group of at least one cyanocephala, at least one Yellow-belly; one or two BYB's; flycatchers; possibly others. The BYB(s) may have left the flock without being followed by the

(27)

other B/E(s) moving (see today's notes on Camptocoma), probably after leaving the place. Others quiet. All on trees 10-30 ft above ground, along edge of road.

IV. 1 Atlapetes republicana (white spot on wing), and 1 Thryothorus atropurpureus, were seen, a few feet apart, in mixed coniferous forest, a few yards. Probably silent or quiet.

Groups II, III, & IV were seen in nearby areas, within a few feet of one another. They may, conceivably, have been parts of one larger group. If so, IV is probably following III.

During the same walk uphill and downhill, I saw a group of 2 or 3 Cyanocitta stelleri, ca. 8000 ft, in low trees by the side of the road. They may have been alone.

Also saw two groups of 2 or 3 Blue and Blackies, at fairly low elevations, in trees by the side of the road. They may also have been alone.

Also saw one pair of Yellow-bellies. In similar environment. Possibly also alone.

Also two groups of Butorampus montana (see today's notes on genus). They were both definitely alone!

Butorampus montana seems to be the only local blue and yellow-tanager which keeps quite apart from associations with other species. Possibly it is so large that it frightens other species? And/or feeds on different foods ???

10:45 a.m. 8000 ft. Rain still continues. See large mixed flock along edge, and slightly within, heavy virgin-looking forest. Includes at least two adult and one juvenile Blue and Black Tanagers; at least two Yellow-faced Redstarts (probably

more); one Cy; one Atlapetes rufinucha; several Chrysomitris (usual species); lots of hummingbirds; flycatchers; Troglodytes idols. Definitely no BYB's, cyanocephala, S. heinei. The flock in general was quiet. I did not make much progress while we waited it (approx. 15 minutes).

The "center" of the flock is usually composed of Blue & Blacks (with or without some or all of the others). But 1 or 2 Blue & Blacks sometimes flew away from the group without being followed. When the Blue and Black's were at the center, they were usually surrounded by flycatching birds. The Cy and the rufinucha were frequently on the outskirts of the group. Most of the members of the flock stayed 10-40 ft up in trees. The Cy and the rufinucha sometimes went low (only a few feet above ground) in scrub at edge.

The Yellow-faced Redstarts do appear to be regular members of mixed flocks. But I have not been able to determine if they play exactly the same role as Collared Redstarts in Chiriqui (I wonder if Collared and White-faced Redstarts are particularly closely related???)

11:05 a.m. Another area, same altitude. Open second growth trees. See a single Cy follow a pair of cyanocephala. I am somewhat surprised to find BYB's, Cys, and Yellow-bellies in mixed flocks here.

Must check to see the position of this area within total ranges of the Yellow-belly and BYB.

Cy is the most remarkable. At first I thought it might be particularly gregarious in the Central Andes near Medellin and

- (4) the Western Audubon here because the area is generally unfavorable for Diglossini (wide ranges of undulata and capensis, possibly the rarity of albellata, spp. at distance Couesstrum, etc.) It could be a general rule that species show inter-specific gregariousness in some regions, but not in others. Savanna, i.e. in regions where they are rare. But the B&B's in this region would seem to contradict this (as a general rule). Possibly species tend to develop inter-specific gregariousness wherever they do not have many close competitors ??? (Probably there are more hummingbirds near Quito than anywhere else I have watched Diglossini.) It is also possible that the whole situation is due to the fact that Cys have a special inter-specific preference for Blue and Blacks.

November 4, 1962
Munich, Germany

5:35 a.m. 8300 ft Weather clear today.

Pair of Blue and Blacks feeding in tree along road. About 20 ft. above ground. Pair of Thrushes in same tree. Difficult to tell if they are associated or not.

Blue and Blacks utter single "Trit"s, and short series of such notes, in addition to "see-see"s and "see-see-see"s.

Thrushes move in different direction from Blue & Blacks.

6:05 Now see 3 Yellow-faced Redstarts in tree next to Blue & Blacks, about 20 ft away. Then Blue & Black j —> Yellow-faces. Then Blue & Blacks move on without being followed.

This pair of Blue & Blacks is not very nuclear!

6:20 am 8520 ft. Small 3 Blue & Black
along side of road. Several growth. Sparrows all over
with any other species.

6:30 am Considerable further on. For 2 other. One of them
d. Blackies feeding in small tree. Joined by pair of Yellow Green.
Then Black & Blackies move on. Sparrows & Blue & Blackies
Then birds move far away. But 11 now. Blue & Blackies appear to
be larger. Blackies on back & wing. 1-2

Then see another pair. Blue & Blackies above
8650 ft. Still another pair of Blue & Blackies in long above
in small tree in scrub.

Blue & Blackies are certainly enormous, abundant up to
7:00 am. 8750 ft. Near presumed by singing in last tree.
Then see single slate throat, approx 40 yds away. Then see pair of
cyanocephala further on. Then more birds near latter. Including at least one
Yellow face, and a pair of Blue & Blackies cyanocephala flying →
Both species tanagers feed on fruits same small tree, but not simult-
aneously. Similarly both Redstarts fly at the same tree, but again
in not simultaneously. There is a patch of wet forest. Both Blue & Blackies
rather open.

Blue & Blackies are not usually conspicuous at the center of
this flock.

A few feet further on we see what may be same pair of Blue & Blackies.
Yes. Still followed by cyanocephalas. Then Blue & Blackies fly off.
Not followed by cyanocephalas. Land in another tree. Here they are mapp-
Canted & chased (possibly actually attached) by "Yellow-bellied" Blue &
Blackies then fly off in one direction, "Yellow-bellied" in another.

This "Yellow-belly" shows same species as seen earlier this morning. This time, get slightly better look at it. Wings & head apparently blackish. One belly is yellow. Yellow patches on side of head appear with large throat. Very similar form.

9:10 8750 ft. 5-6 feet apart. Group of Blue & Blacks, 1 Yellow-belly, 1 Cyan. Yellow-belly \rightarrow Blue & Black.

Get another fairly good brief glimpse of the "Yellow-belly". Just like the same form, but yellow patch side of head somewhat different to shape and there does seem to be a blue mark on the primaries.

This is probably the same Yellow-belly seen with flock yesterday. All flocks seen today have been quite quiet.

CORRECTION. If first point reached yesterday 8750 ft.

Then — 8:30 a.m. 9300 ft (confirmed). In edge wet forest along road. (Forest moderately high, for such an elevation, and somewhat broken up by the effects of road-building and landslides.) See enormous mixed flock. Probably the largest I have ever seen. Including large numbers and many species of furnariids (s.l.) and flycatchers. Also a variety of hummingbirds. Also the following 9-pinnated songbirds (quite possibly others as well):

At least 3 PL Antapetes. Definitely identified. Sometimes (probably not always) the leaders of the whole group. Usually quiet. Occasionally uttering bursts of "grating" noises. Sometimes in low scrub or tangles. At other times high in trees, at least 20 ft. above ground.

At least one pair of Yellow-faced Redstarts. Definitely full

3
owners, at least most of the time. But often (or usually) quite near the front. Also frequently making noises to side. Both high in trees and low in scrub.

Also one pair of Setters. Definitely followers. Toward middle or rear. Quiet. Both high in trees and low in scrub.

One ♀ White-capped Cuckoo ("WCC"). Possibly also one ♂ (at least I caught a brief glimpse of what appeared to be a small blackish bird). Like Setters. Some of the flock were off to the side. Quiet. Both high in trees and low in scrub.

The Setters appeared to follow the ♀ WCC for some seconds or minutes.

(This is an unusually high altitude for WCC's. But the identification of the ♀ was clear. Perhaps the WCC(s) followed the flock up from lower altitudes ???).

One pair of Yellow-bellies. Definitely followers. Toward rear and (sometimes) outskirts. Quiet. In trees.

One or two Chlorornis!! Definitely followers. Toward middle or rear. Quiet. Both high in trees and low in scrub.

At least one Cremoscopus nigriventris. Quiet. Both high in trees and low in scrub. Near front. Possibly leader(s) ???

Also one or more "warblers" which looked like Prairies luteoviridis but with stripe above eye white. Usually low in scrub. Quiet. Probably a follower ???

As far as I could tell, all the 9-primary songbirds noted above were feeding on and/or cooling for insects.

The flock as a whole was rather noisy. Mostly "CN"s, but

an awful lot of them !!!

Two tree-wrens (same species) became involved in a fight. This was the only overt hostility observed within the flock.

When first seen, the flock was moving rapidly down hill. Then turned around and moved rapidly up hill. Moving much more rapidly and vigorously than any other flocks I have observed in the Andes (with the possible exception of the brilliant flock near the Páramo de Guana - where it was at its best.)

Two of these Butoraptes montana were also associated with this flock throughout the whole period the flock was watched (approximately 1/2 hour). But their association appeared to be "coincidental". The Butoraptes flew by, occasionally, back and forth, without paying any overt attention to the flock and they remained behind when the flock left!! The Butoraptes uttered quite a lot of "seee seee seee ..." notes in flight, both when the flock was near and after the flock had left. Usually or always in tree tops. Certainly never functioned as leaders.

NOTE: I am beginning to think that my identification of the "BYB" yesterday was mistaken. I may have seen a Yell warbler instead.

November 4, 1962
Marces

At 5:35 a.m. Clear. Not much early morning song. No DC. Birds obviously past peak breeding season.
6:00 a.m. See a group of 4 BYB's flitting thru tree-tops. Upper

cutly not associated with individuals other species.

The presumed migrant *Catharus* around here is with a wash of buffy on throat, and, apparently, a buffy eye ring.

6:10 See group of 3 or 4 BYB's (presumably same as before) in the tops. Again alone.

6:50. Have seen same group BYB's several times more. There are probably at least 5 birds in group as a whole. I was alone!

7:05. Much forest. See mixed flock in trees. Includes several *Tangara arthurs*, at least one (♂) (*Cypripedium*?) several others (either *Ammodramus ruber* or some other, but not the stumped headed, yellow-bellied *Basileuterus*). *arthurs* may have been leader. This flock was in exactly same area where BYB's had been earlier, but the BYB's were neither visible nor audible at the same time.

The *T. arthurs* uttered lots of single "see" Notes. Occasional "see-see"s. With very little or no trace of the hoarse quality of the notes of Silver-throats. Also rather loud, hard, single "Tuck" Notes.

There are several large trees around here, covered with tubular pink flowers. But they have not been visited by any diglossines (and probably not by any humming birds). I think diglossines may be absent here.

The mixed flock described above moved on quite rapidly. I followed in same direction. Catch up with the *arthurs*. Apparently alone, except for a single *Catharus* about 20 ft away. There is a juvenile bird with the group. All the *arthurs* are feeding on the same milky stone "berries" as the BYB's earlier.

7:30 a.m. See mixed flock in second growth along edge of road.

includes at least one Labradoules, migrant warblers, others
seen about 2-3 ft above ground. Then a little farther on we
see others on (unlabeled), Labradoules one forward, others
about 2-3 ft above ground. I know part of same flock. No trace
of BTB's.

BTB's are definitely keeping away from mixed flocks here.
There were no obvious leaders in this arctus Labradoules
flock. Flocks were very mixed and all the associations were suc-
cessful.

7:30 Saw what may be a single local BTB in small tree
in scrub along road. About 100 ft. part of arctus Labradoules
flock (Crown grayish, bill or no white behind eye.)

Fog coming in now. Difficult to see birds. 8:00 am
arctus Labradoules flock still around. Doesn't seem to be
progressing in any particular direction. Birds flying back and forth
trees both sides road. Includes at least 4 or 5 arctus single (?)
Labradoules still with flock. Also forward. Also at least one S.
multicapala. One Black-throat nearby.

1 Labradoules } —————> arctus

One fight between 2 arctus

8:10 Flock apparently getting larger. Now includes lots
more warblers (including one Black and White, one Pitangus or
Parula). Also one Yellow-throated Tanager! One pair of another
Tanager species. (XVIII).

Flock still in area where BTB's were. BTB's still absent.
arctus certainly nuclear in sense that they are most common
and conspicuous. But they don't seem to provide much leadership.

No other species seems to be reacting to them just yet.
Although may be uttering Gills (Gill's calls) or s. frequently. At least something is.

There are at least 2 xanthocephala with flock. One is young
1 xanthocephala ♀ — XXVIII

The labradorides definitely seem to stay moderately low in
shrubbery. Little Tanager is usually or always high. xanthocephala
also usually appears 15-20 ft above ground. XXVIII is higher than
tops, 25-30 ft above ground.

The 'BCB' have a probable different species (XXIX)

XXVIII's do have black in wings. Just brown.

There are probably 2 XXIX's with this group. One is, possibly,
chasing the other, uttering long R in flight. XXIX(s) usually found low
in shrubbery, like labradorides. But seldom or never close to the
latter.

Still no trace B4B's around

Flock seems to have moved on a little (downhill) 8:30 a.m.
Starting to come back 8:50

But I have to leave myself

April 1, 1963
In Jaruma, Peru

Worked above Jaruma this morning, below Jaruma this afternoon.
Covering range approximately 10,700 - 9000 ft. No trace of mixed flocks
or any special inter-specific reactions involving species of my group(s).
Species present include CC's, Bonins, Thraupis barnevensis (common) and

L. 4. Type flock listed as XXX in Cert.

April 3, 1963

Near Tarma

Have been working in same areas today and yesterday, plus a little higher area and several lower areas (11,150 ft to 8540 ft). Still no signs of mixed flocks. In addition to the species noted yesterday I have seen several Gray + Yellow Finches (XXI) and one species of Sporophila (XXII), between Tarma and Pálica. Also heard at least one bird singing songs like Catantop "homochrona" near Quito, above Tarma. There are also lots of Andean Sparrows and Black-bellied Goldfinches everywhere. Also some Phryzulus unicolor above Tarma. No associations of any sort between any of these species.

April 4, 1963

Near Tarma

Today I worked in a hilly area, ranging from 8125 ft to 9000 + ft. Some parts of area thick scrub. Other parts open scattered scrub. Still other parts grassland. Occasional trees. Came across 2 Foxgloves, and one pair of PL Atlapetes, in addition to species previously seen.

But still no trace of any friendly association of any kind!

NO TRACES OF ANY MIXED FLOCKS DURING

LATER WORK IN TARMA AREA

Well! Well! 8:22 a.m. 8250 ft. 2550 m. sea. and hill
going rapidly downhill. Then steep of road. The individuals
led from the edge of the wood into the center at least 30 ft. inside of edge
its song. Probably included at least 20 birds. But I only saw a
few of them. 1 Red Woodpecker, 1 Thryomanes bewickii, 1 Empidonax
flavimundus (BYB), 2 White-throats (possibly White-throats from a
distance - but I didn't get a sufficient good view of them - certainly
not Slate-throats) Probably also some Thryomanes - Chlorospingus
types which I didn't see well enough to identify. All individuals were
ranged in trees 15-40 ft. above ground. All quiet, except White-throats
which gave a few matches of song. Red Woodpecker followed
→ group BYB → White-throats. White-throats were
flocking about very actively. Usually at or near 1st group. But at
least once White-throats f → group

Rain 8:40 a.m.

There may have been one thrush at the end of this flock. Apparent-
ly sooty. It suddenly appeared, after the rest of the flock had disappear-
ed. Moving in the same direction that flock had gone.

Rain changes into fog. Then fog lifts more or less, 9:05 a.m.

9:10. 8350 ft. See single sooty thrush alone

9:20 8450 ft. See single sooty thrush. Possibly same individ-
ual as above. Near a single thrush-like bird which may be an Agelaius.
Also several small unidentifiable warbler types. The thrush and the Agelaius
type fly off in different directions. Apparently the warbler types do
not follow.

9:28. Hear a Dulonia in the neighborhood.

9:32. Come across single Agelaius type. Definitely same individ-

is possible to say that the BYB was in front of the HTH. But I think that the BYB had not "come in" yet, from this position from some distance further away. It may have joined the HTH-throats. It was not until the HTH-throats came up with it. It was then with the HTH-throats. I could not determine where the yellow was.

The sooty Hummers seen to my mind all have been at en, I think. Definitely brownish-ecy, not black. My first guess was of the birds with the last mixed flock. They had coral bill and legs. One individual seemed to have a dark eye ring, the other seemed to have a yellow-orange eye-ring. Then dark, light the body. Definitely not at all light. Abdomen and vent region also apparently dark.

If it is really characteristic of this region that Turdus junco and Myioborus miniatus are regular members of mixed flocks, then it probably would be correct to say that mixed flocks reach their "highest development" in this region.

If so, it rather confirms my current general hypothesis. I.E. the development of mixed flocks in any given region is positively correlated with the frequency with which the region is (or has been) invaded from other regions.

ADDITION: The HTH-throats in the HTH-throat - BYB - "Glance" - Sooty Hummer flock were seen to range from 10 to 30 ft above ground. The "Glance" was seen to range from approximately 10 - 20 ft above ground. The sooty Hummers appeared to have much the same range as the HTH-throats. The BYB was

up to some 20-25 ft above ground

(Presumably, the white feathers of B/B's in flocks there are coming from the white feathers of a small bird for some reason. I don't know if this is the case or not. It may have been quite common.)

Placed notes, caught 1st later in afternoon. Gungupskull

3:15 pm. Area where Red-throated could fly - as there were many of them. Some of them (Red-throated) were flying on ground edge & some silent.

They were flying in pairs. The Red-throated were seen like the first category I know in other regions.)

See pair of Red-throated in tree top. Later, several fly into some tree, some land down, they fly off. Red-throated remain behind. Also hear a loud sound like the Red-throated's sound but don't see them before it flies off. Sometimes also giving "Secret" Notes (Alapetes?) not far off.

Gungupskull 3:28 pm

3:35. Another area. Approximately same altitude. Another (Gungupskull) notes forgot. See many flocks. More or less in tree tops. Includes 1 Red-throated, 2 B/B's, 3 Gangara xanthocephala, 1 other bird which may be the real L. labradoroides, probably others. All observed individuals more or less in tree tops. B/B's fly off in one direction. Nothing follows. Then the xanthocephala fly off in opposite direction. Nothing follows immediately. But then I see some other (unidentified) bird fly in that direction later. Catch glimpse what is probably same flock a little further on. Now includes at least one Blue & Black Junco, and 1 Yellow-faced Whitestart. Yellow-faced Whitestart j —
→ Blue & Black.

3:55pm Come across what is undoubtedly a large mixed flock seen earlier. This includes at least the reutheri sp. (1), 2 B/B's (i.e. the B/B's must have rejoined the group after leaving it once), 1 White-bellied Flycatcher, and 1 WCC. Perhaps others. Group has now left forest and is flying from isolated tree to isolated tree in pasture. 20-30 ft above ground. All quiet. The 2 Tangara species seem to be in the lead. Also, the B/B's definitely follow the whole group. They also seem to be hanging up the rear.

B/B's seem to be active members here.
Flock moves on and I lose sight of it.
See Acorn-Woodpecker-like Woodpecker alone.
See single Sooty Thrush alone.

4:20pm. Another patch forest. 8175 ft. Looks like patchy original forest. Including 10 or 12 small warbler-like birds. Usually quite high up, 25-40 ft above ground. Occasionally coming down as low as 15 ft.
This part of the group includes at least 1 Chlorospingus sanguinolentus, 1 bright blue bird (♂ WCC?), 1 unidentifiable migrant Dendroica, 1 Tangara. When the group was first seen, there also was 1 Sooty Thrush in tree tops, right in the middle of the other birds. But the thrush apparently did not follow the others when they moved on. Also closely associated with group was 1 Yellow-faced Woodpecker (see description LXXXIV). This bird spent most of its time flitting around scrub edge forest, 1-20 ft above ground. SHHH

Group as a whole fairly quiet, but there were some "CN" and "alCN" and some more complicated vocalizations from time to time. Shortly after I became aware of the group, a flock of "Acorn" Woodpeckers flew into trees about 5-20 ft away from the warbler-

types. At least 2 were present in the group. Silent. Began to rise and
down to 10-35 ft above ground. But then all eventually moved
off to appear to disintegrate into the usual type groups.

Fig. 1000000 - 4, 4, 4, 4

The two two-type flock was a dominant. They were utter-
ing a lot of "EN"s. But the single by appears,
different flock. Moving uphill, Indigo at least 1 pair of 2 different
species, small woodpeckers, 1 juv & 1 adult different species flycatchers, 2 adult
and 1 juv parthocephalus, 2 juv s, some indistinct (unidentified),
1 WCC and 1 WCC. Also others (inconstant warblers).

All in two-taps 15-45 ft above ground. Group as a whole quite
to noisy. Lots of "EN"s. Also R's.

BYB's follow and join group repeatedly. parthocephalus follow
group twice (at least). No sign of any particular close
association between the 2 young tanagers. Difficult to say who is
leading group. At first, some of the woodpeckers seemed to be in front.
Then the WCC's seemed to be in front for a while. Woodpeckers of —
→ WCC's.

Incidentally, the WCC here has a light blue cap. I think
that the supposed "Glauc" I saw this morning may actually have been
a WCC (The identification this afternoon is definite. I saw the
Common bill.)

If there really were 2 flocks here this afternoon, this may be the
first time I have ever seen "ranges" two mixed flocks overlapping.

This last flock starts to move on. So I go inside the patch
of forest. To the area where I think the tail end of the flock still is.
At this point, the fog turns into heavy rain. So I can no longer see

any birds above me. But I do see a family group of 3 Itapetes
brunnei-nucha (looking just like the brunnei-nucha). 2 ad. & 1
young. In very low scrub, 5' to 10' above ground. Scrub is
thick, well covered by them. Just like some of the scrub in the
same species in Panama. I was one of the birds - uttering some
notes (probably best type I've ever heard of as far as the
note). It is quite possible that these birds were connected with (or
related to) the flock in the trees!

COMMENT: Certainly, brunnei-nucha are not rare here
now!!! And there is no evidence that they are depressed or suppress-
ed, by bad weather here. The whole picture seems rather different
from the Sierra de Merida (or the Eastern Cordillera of Colombia).

May 1, 1965
Munchique

Arrive very top of Munchique, just by the TV tower, just un-
der 3000 m, 6:50 a.m. Cold and windy. Fog just starting to come
in. Vegetation here is dense "alpine scrub". Looks ideal for Cephus
si. n. l. and associated form. But everything quite quiet now. (See
comments below.)

Quite a lot of red tubular flowers near here.

See and hear some little birds flitting about. But all low in
scrub. Some of them certainly are hummingbirds.

Go down the road a little bit. To where there are some la-
rger trees. See a couple of single thrushes alone. Presumably basileus.
Vegetation here much lusher, "lower altitude looking", although there

area can be more than 100 ft below peak

7:30 am 7:50 ft. Head and some brief glimpses of a view of
Boscon - some hummingbird type. No low scrub, also in trees 30 ft above
ground. Uttering chirp. Apparently alone.

Windy and cold, but sun. But fog has lifted.
See more thrush above. Apparently pretty. But just birds up near
But half dead.

Looking at some red tubular flowers 4:43. No Diglossa holes
4:49. Hear what sounds like horn in distance.

Going up hill again 7:30 ft 4:54. See definite mixed flock.

Includes at least 1 pair Blue-crowned Kinglets (species seen before) - LXXXVI

4: Blue-Orange; 1 PL Atlapetes, 1 yellow-green, some hummingbirds
Agelaius-types definitively in PL (fly catching all around) 82 f →

group. empidonax f → group. Blue-Orange f → group.
p. All birds large in rather scattered trees. 30-40 ft above ground.

Then PL flew across road into low scrub. Nobody follows.

It may be significant that the wind abated, temporarily, just
about the time I saw this group.

8:05. A few feet further on, getting up with group again. Still in trees.
as. Now include 1 Yellow-belly, 1 GT. GT f → group.

All birds quiet. Then hear one brief twitter. Quiet again.

Group now, 8:10, seems to have disappeared down hill.

A little further along road, see pair Sooty Thrushes alone. One
has orange bill, legs, dark eye ring. The other has darkish bill and legs
as well as eye ring. The latter seems to be Begging from the former. Presum-
ably juv and adult ♀. Both birds first in low scrub and then in trees.

Wind still abated now 8:17. And it actually looks as if the

sun might come out

Up by TV station again & see some humming. Wind not so bad. These were birds ideal for this area. (not) certainly have seen some yet. See another with sooty throat & alone

Nothing 7:00 am!

There seem to be quite a lot of little birds in the scrub here, but they are impossible to see and identify

9:35. Going down hill. See pair sooty thrushes apparently alone

9:45. Hear where mixed flock seen earlier. See single Yellow-belly. Apparently alone. No reaction. There are at least 2 birds here. Probably pair Yellow-bellies. Feeding in trees 6-20 ft above ground. Uttering "CN" sounds. Distance further on, see single Orange-bellied alone

10:00. Hear a single sooty thrush from scrub in which I hear another species vocalizing. But latter unfortunately unobtainable

10:05. A single Aquarius type flies around, flycatching. Then flies straight away, like an arrow. Immediately, a single Yellow-bellied launches itself from scrub and flies after Aquarius type. Apparently not hostile. Presumably the Yellow-bellied just couldn't "resist" the sight of another bird flying away

See another single sooty thrush alone

10:25 am. A small blackish or dark blue bird flies by alone

Beautifully warm and still now!

10:35. Going up hill again. Hear some twitters which might conceivably be other song phrases. Only 2 or 3

Will! Will! 10:34. 9250 ft. Region of low, dense, scrub, tangles, under dead trees. Surprise a ♀ Albi. Very upset by my presence. Lots of extreme TF's, with less extreme WF's. Lots of sharp, high, "Int"

Notes. Also lots of P. of extremely varied lengths, apparently accelerated & even "fast" notes. The thin band is quite conspicuous, I don't seem to attempt anything else.

Then, as we moved back with W.C. and Feltis seen in 19
 as to specific range of like to 2000 ft. W.C. Feltis, and Ag. (which
 occur further down the mountain — see opposite below)

A little bit further on, as we go to the top. Apparently alone.
 But it had just flown down hill. And when I go up hill, to area,
 where it seemed to come from, I see pair of Butoranges. Feeding on fruit
 in trees and scrub. Saw species seen before, i.e. swallowtail. Now appare-
 ntly alone.

When I look back to GT's, I see large pair of them. GT's
 are followed (after a minute or so) by pair of Yellow-bellies. Yellow-
 bellies also coming from area where the Butoranges used to be! GT's
 then fly off. The Yellow-bellies do not follow, at least immediately.
 Then Yellow-bellies fly off in different direction.

Leaving 11:20 a.m.

On way down, see at least two more mixed flocks. The first
 only a few feet below where I had been working. But I had no time
 to stop and look at them.

COMMENTS:

On the way up (by horse!) at dawn, we heard a great
 deal of bird sound near the base of the mountain (probably ca.
 8000-8500 ft.). Possibly the birds of this altitude are breeding
 now. But the sounds decreased, very markedly, as we neared the
 top of the mountain. Certainly, most of the birds around 9000 ft.
 are not breeding (viz. also the later observations this morning).

II It is possible that mixed flocks near 9000 ft. are smaller and less specialized than the flocks at slightly lower elevations near (see especially, this morning's observations of *S. t. thomasi*). But the 9000 ft. birds certainly do (still) form flocks with appreciable frequency. It is too soon for me to tell if these flocks are "dispersed", or "reduced", or otherwise altered, by bad weather.

III It has just occurred to me that two of the things which occur in mixed flocks are most frequent. i.e. the *Chloroerythraea* and the GT, have rufous or chestnut vent regions. Is this an adaptation to induce following responses (and seems to be in some related species) ???

IV Most of the species observed today played the usual roles that I expected. But I was surprised that PL's were not more conspicuous in flocks. And even more surprised to find *Agreornis*-types as leaders. (This may be another area — like the Eastern Cordillera of Colombia — where there are more natural followers than natural leaders.)

V GENERAL. I must try to get my ideas in order.

Let us assume that mixed flocks are absent from the central Andean area, but present along both the northern and southern frontiers. And highly developed, also, in the Western and Central Cordilleras of Colombia.

I think we may also assume that the formation of mixed flocks is a "frontier effect". Advantageous to individuals living on or near a frontier (probably because frontiers tend to move back and forth, and gregariousness is advantageous to birds

occupying new areas.

But it probably is strongly disadvantageous, in many cases, for birds not occupying new areas. Thus, there will be strong selection against it everywhere except on frontiers.

Whether or not gregariousness develops in any particular population of a suitable species must depend upon the balance of selection pressures for and against it. Populations with frontiers on three sides tend to develop gregariousness. Populations with frontiers on only one side usually do not.

The extreme development of gregariousness in the Western Cordillera of Colombia can be explained on the frontier hypothesis. The temperate and sub-tropical areas of this cordillera are essentially a series of small islands. Any population in any one of these islands will include a relatively large number of individuals on the borders and a relatively small number of individuals "inside", away from the borders.

The crucial area will be the Central Cordillera of Colombia.

If the mixed flocks of the Central Cordillera are less highly developed than those of the Western Cordillera, then it seems quite likely that the "frontier effect" may explain almost the whole of the variations in gregariousness throughout the Andes.

If the mixed flocks of the Central Cordillera are as highly developed as those of the Western (or, better yet, more highly developed), then it may be necessary to invoke another (additional) phenomenon or process. Possibly the frequency of mixed flocks in any given area depends upon the frequency with which that area has been invaded by other species — invaded by species which have had to cross over

gaps in order to get there. The Central Cordillera, being surrounded by insular mountain areas on almost all sides, must be expected to be invaded (over gaps) more frequently than any other part of the Andes.

Comparisons between the Eastern Cordillera of Colombia and the Sierra de Mérida on the one hand, and between the Eastern and Central Cordilleras on the other hand, should confirm the conclusions suggested by the comparison between the Central and Western Cordilleras.

This afternoon working near the Finca. Some patch of forest where slate-throat flock was yesterday 3:30 pm. It is still overcast (altho there are rain clouds and thunder in distance, and patches of fog are not far away). Not a trace of a bird here now!! No sight or sound. Does good weather discourage the formation of mixed flocks among the birds at this altitude ???

Fog comes in 3:40 pm. Only a couple of minutes later I hear my first CN-like Notes!

A few minutes later, hear first thrush sounds. Also something which may be a Dubusia in distance!

Then we group 4 thrushes together. In trees. Apparently alone. Uttering lots of their high "screee" Notes. One supplants another in an apparently hostile manner. With "squawks". Then all fly off.

A little further on, we single thrush alone.

Fog now getting thicker 4:05 pm. Then lifts temporarily 4:15. Still no real activity in this patch of forest.

4:32 pm. Again we pair thrushes apparently alone.

4:35. Hear something that sounds like Albi R.

Then we saw many more Flat-throats R. Same place as yesterday.
Then we saw a pair of Flat-throats R. 4:20 pm Saw birds (S. L. S.)

5:00-5:15 App. with clouds

5:15-5:30 Low fog - no flying - no flying - no flying

5:30-5:45 More birds - some + some - some flying - some in mixed flocks
anywhere. They seem to divide into flocks. As their respect is where
sh they are dispersed - etc.

5:45-6:00 Fog lifts completely, 5:50 pm. But Flat-throats continue R's
Containing the Flat-throats and footy Thrushes are not always
in flocks!

Flat-throats silent now 5:02

See single Thrush alone

Leaving 5:12 pm

May 2, 1965
Munchique

Arrive top Munchique 6:22 am Clear Warm. Moderate wind.

On way up, at relatively low elevations, I heard Lof-like songs
ca 5:45 - 6:00 am. No area to and east unsuitable for Lafayette song.

Presumably White-throats.

There is very little singing, nothing singing, at this level 6:30 am

19 6:37 Pair Yellow-bellies moves thru tree-tops. Low trees, only
13-20 ft above ground. But the highest available here. Birds definitely alone

c uttering "Sect" Notes

20 Just about 1 minute later, a whole group (4 or 5 inds) of small birds
moves thru tree-tops in same direction. Only individual identified is a

Blue & Black. Possibly these birds are following the Yellow-bellies at a distance. Right behind them is something (unidentified) brown. In the low scrub. The whole thing passes as a real mixed flock. Very noisy. But moving steadily and rapidly in one direction.

23 6:16. Another Yellow-belly fairly alone. But going in same direction as other birds.

Do all the birds here just start moving independently along usual paths early in morning? And then "clump" together whenever they encounter one another?

14 6:58. See single Yellow-belly. In fruiting alone. Probably one of the same individuals seen earlier. Feeding on small green fruits in large tree 20 ft up. This tree seems to be same species which occurs over much of Andes. If so, I have also seen others eat this fruit. Yellow-belly utters lots of "seet" notes then flies off.

See single Sooty Thrush alone. Bright eye ring. Feeding on fruit scrub. 6 ft up. Silent. 7:06 a.m.

3 Going down to where mixed flock seen yesterday 7:18 a.m. See single Yellow-belly alone. (This species is very prominent of the Jubels in most notes and all actions.)

16 See a single White-bellied Flycatcher alone. In tree 20 ft up. Feeding alone. See a single Sooty Thrush (dark eye ring) apparently alone. Joined by another. (These may be ♀ and juv. seen yesterday)

8:00 Hear Scans around 7:30 a.m.

See another Sooty Thrush alone. Joined by another (dark eye ring). In tree 30 ft up.

18 7:37 a.m. One OT flies in and joins another high in tree. Utters loud noisy metallic notes in flight. "Tā-ah tā-ah tā-ah tā-ah..."

Then one or two birds in other 12 variety of loud sounds in tree. Thrush noises they have not heard them with Yecker. Then both fly off up hill. Apparently alone.

The thunder around here seem to be igniting. Very noisy. Large Scoty Thrush seen again 7:40. (Still) alone.

41 flits 7:51. Wren and about. No sign of 2 Wren where she was yesterday. Then she suddenly

see juv Scoty Thrush alone. Then parent appears and the two fly off together.

42 Going on down hill. See many Agelaius-type in flight alone. Also or more Catherpes alone.

43 When suburban region margin forest 9:10 ft.

44 Going up hill again. Thrush Wren 2 Wren feeding tubular red flowers very low down along wood growth near Alone certainly not the same individual seen yesterday. Sub edge high margin forest. Very luminous looking. Not at all "alpine" in appearance. (No small timbered trees, etc.) In shade.

45 See another White beard alone. High in tree tops. Then see that the one is an enormous mixed flock quite near the White beard. At first moves very rapidly up hill. (When I first saw flock, I was at 9:25 ft.) Then down hill. Group moves very fast. Very well coordinated.

46 Includes at least the following 3 Bettis (adult juv plus young one bird feeds another), 1 WCC, 1 Ag (definite), 2 Chonoscops, 1 Myiophobus, 1 GT, 1 PL Atlapetes, several Pyrocephalus and several Junco various, at least 1 Yellow-faced Whitethroat. Definitely no thrush es, Yellow-bellies, BYB's, Blue & Orange, or Bulwer's.

Although the flock was so rapid and well coordinated, there were

Left
Cy
no no regular, consistent leaders. Twice the GT was in the lead. Twice the fitties were in the lead. Once the P. was in the lead. Once the Cy was in the lead. Once the *insectivorus* was in the lead. I & some of the birds were following all the time. But the others were following most of the time.

Left
well
Cy
The *Agelaius* (all 2 species) seemed to stick fairly well and close together. The small *formicivorus* tended to stay close to the *Agelaius*.

Left
Seems
all
At one point, a single *Scapanus* came and sat on a perch about 30 ft from nearest members of flock. Then flew away. Very *Lepus* *Hesperomys*-like. The local *Alb.* (s) did not appear at all.

13
Altho I never saw a *Dulcinea*, I am sure, from sounds that it was following flock. Definitely to the rear.

All the observed birds, except the GT, stayed high in trees, 20-30 ft above ground during the whole period of observation. This is a sort of what looks like natural sub-tropical forest; but rather broken up by a fair number of fallen trees. The GT consistently stayed lower than the other birds. 10-20 ft above ground.

Left
Cy
Flock as a whole noisy. The Cy sang steadily throughout all the time it was with flock. Song phrases with "Tut tut" "Tut-tut-tut-tut" Lots of "CN"s + miscellaneous twitter by many other birds. One of the flycatchers also sang pretty steadily. The GT, however, was quiet.

There were no disputes between any birds at any time.

Beginning to cloud over 9:05. I will continue up hill.

Left
23
9:10. See single Yellow-faced Whitestart in top trees, 20-30 ft above ground. Definitely alone. Correction: It is a pair of Yellow-faced Whitestarts. Eventually, they fly off across road and down hill. After

They are well covered, a swift White-throated Flycatcher flies up from a patch of vegetation some distance away, and follows the Whitethroats for 20 ft. Then the White-throats goes up the chase and lands separately. Once only the White-throats has some unusual following and/or joining tendency.

9:20 a.m. Going on up. See another mixed flock in patch of 31 very dense, natural alpine scrub. In birds: 4 Blue & Blacks, 1 Yellow-bellied, 2 cyanocephala. Birds flitting about top of scrub. Probably 10-20 ft above ground. Quiet, except for "CW"s. Yellow-bellied follows and joins Blue & Blacks repeatedly. cyanocephala f —> Blue & Black at least once.

54 When I first saw the flock, there was a ♂ Albis alba about 4-5 ft from the Blue & Blacks. (This is an area where I heard R's earlier). But he soon disappears. This would suggest that "Albis alba" does not "mixed flock".

Going on uphill 9:30. Sun out again, but more patches fog are coming up.

As I go, I see the 4 Blue & Blacks of the mixed flock flying uphill. They are not followed by anything else. See single Sooty Thrush alone.

Up by the TV Station again 9:50 a.m. Everything very quiet. Seen shining thru fog.

21 See single cyanocephala alone.

Leave 10:10 a.m.

On the way down, see a swift Buthorupis fly across road. Certainly alone in flight. But there may be other birds in the trees in which it lands.

COMMENT: What in the world do such species as the Litter

and the Blue and Orange Tanager do when there is a hawk or falcon around? Especially early in the morning? (It seems that mixed flocks do not form until some time after dawn.)

Presumably Blue & Gold's are not very "successful" as passive nuclear species (i.e. are not always followed by other species) simply because they often take long flights. (The B. & G. may be so "successful" because their flights are always or almost always short. Their flights do not cause them to "disappear" suddenly. Their companions probably can usually track them, still, after they have flown.)

My observations here, this year and in 1962, indicate that every single one of the local species, belonging to the groups in which I am interested (i.e. honeycreepers, tanagers, Whitestarts, and Bush finches), occurs in mixed flocks at least occasionally. The only possible exception is Atlapetes brunnei-nucha.

This is really quite incredible!

The behavior of many of the birds here is excellent evidence that the principal advantage of joining mixed flocks is protection against predators. Certainly many of the birds in mixed flocks are not feeding on insects while with the flocks. Only attendant flycatchers make flycatching flights. It's certainly spend all or most of the time getting fruit. So, in all probability, do many of the other tanagers (I have yet to see Butorampus take anything but fruit).

I am not sure that there is anything like a purely tree-top mixed flock here. I think that all the flocks I have seen, so far, have included at least one member who occasionally came down into at least moderately low scrub.

I have since seen small individual, brownish squawks here. One fairly low, near the fence. One high, by the TV station. The other was with a nest of eggs.

Oct 20th with this afternoon. Can see several mixed flocks. In rather open, open and some deep stream. Groups in flocks at least 1 *Xanthocephalus*, *Myiarchus cinerascens*, *Myiarchus cinerascens* mixed at least part of the time. All is still 10-20 ft above ground. Getting 'CN' and 'PN' type notes. ♀ All of — group, for at least a brief period. This stream is about same altitude as Tuna.

2:30 pm Edge larger patch forest. Near few *Laf. cin. phaeus*. Presumably the Yellow-faced Whitestart. 2225 ft.

2:38. Up to now whole trip has been in sunshine. Now we reach area where there is fog and rain. Immediately we hear more bird sound. Transition very abrupt.

See single Sooty Thrush alone. No it is a pair. Region low second growth scrub. Then a third Sooty Thrush appears. Supplants one of the others 3:16 pm.

13 3:42 See single Yellow-faced Whitestart in high second growth scrub with some larger bird (Sooty Thrush ???). Larger bird flies off. Whitestart stays behind. Then see a large *Mittalornis*-like flycatcher. —> Whitestart. Then flycatcher moves on, Whitestart does not follow.

14 4:03 Region thick second growth scrub, between forest and pasture. See single "Glauc". Flitting about low in scrub. Apparently looking for insects. Also, apparently, probing at base of orange tubular flower. Really, I don't know what it is! Looked chunkier than all or most of WCC's. I didn't see the bill. But this bird did have prominent white tufts on, more likely, white axillars and/or whole underside of wing. Cons

(25)

previous during WF's. I am pretty sure that the bird of
day ago has similar white plumage. At first I thought the
bird was a ♂ Allie. But it was definitely blue-ish. Dull and dark.
There was a little fog at the time, but I would be surprised if more
or less black feathers would produce such a blue effect.

Stop observations 4:30 p.m.

5:25. Go to small forest where first "flame" seen. Weather
is clear now, here, and everything is very quiet.

See Sooty Thrushes coming in to roost 5:25 - 5:35. Just 3
individuals, then 2, then 1. All apparently going into same tree.

Leaving 5:48 p.m.

COMMENT: Why is it particularly advantageous for the
birds in the Western Cordillera to form mixed flocks for defense against
predators? Are there more predators here than in most other parts of the
Andes? (Do predators come up from the lowlands more frequently here?
Or is it that the very humid forest and scrub here is noisier than in
most other places (constantly dripping water, etc.)?)

May 3, 1975
Munich

Arrive place where I heard Laf-like songs yesterday, 5:40 a.m.
8600 ft., 2610 m. Region obviously second growth scrub along road, a few
scattered old trees further back. Warm. Clear. Just getting light. Every-
thing rather quiet at first.

First Laf-like songs, short phrases 5:42. General amount of
bird song building up.

Just 11:45 AM. 11:45 to 11:50 Not overlapping anything.
Then more of the long, narrow and the shortstart & the places
is a very prolonged.

There are some small reddish flycatchers here. Yellow & a little
in the 11:50 of 11:55, but lower and more.

11:55 See a lot of flycatchers along.

One of the flycatchers is about 11:58 am. So probably the best
in here and a beautiful.

See another single flycatcher along. And another.

Lots of the same birds are around here too.

Still an occasional leaf-like flycatcher.

That nested mountain catbird is here. 11:58 am, alone.

A pair of leaf-like flycatchers plus a lot of 11:58 am.

One of the Atlapetes ruficauda is seen low-mattered on
land slide. 11:58 am. Then, I see what is obviously a Black De
glana, with humeral patches, fly out of the scrub in which the ruficauda
was working and fly to another patch some distance away. The ruficauda
humeral do not follow.

This area is exactly 8050 ft.

See (another) catbird alone 11:58 am.

This whole landslide area seems to have a fauna more similar
to faunas with which I am familiar in other parts of the Andes than the
other parts of this mountain.

11:42. Region of second growth trees and bamboo edge of another
slide, same altitude. Some bird giving leaf-like songs. All short
phrases. Obviously heteromelane. But unfortunately, I can't see the bird.
I never can! I wonder who can be giving these songs.

Each Raf-like phrase suggest in comparison as "large" to "small"

3:20

Turning cold wind and clouds in air 5:50 a.m.

3:40

4:00

4:10

4:10. (Later phrase of Cy. (Sparrow?)) with one other bird, in tangles and trees region of low vegetation 20-40 ft up. Swallows. I think the other bird is another Cy. long shape. It is not an Alc. gale communal after all!

4:20. See another group of Swallows flying over.

3:40

4:40. See a single individual of one of the Phylloscopus species that it was with the big mixed flock yesterday. This individual today is alone. Seen receding this area 4:50 a.m. But wind getting stronger and stronger.

4:10

4:20

4:15 Another burst Raf-like song in an area where I also heard them earlier. Sand dune edged with faggly logs and thick ground grass growth. Then see mixed flock. Composed of two rufopectus and 3 Yellow-faced Whitestarts. Whitestarts flitting about actively, in usual way. Ranging 1-20 ft above ground. rufopectus ranging from ground up to 10 ft. Whitestarts quite silent while I observe them. No Raf-like songs while group is present. (This might suggest that Raf-like songs are not uttered by Whitestarts.) rufopectus noisy. Lots of "feet" Notes. Also "Tut"s when near me. rufopectus repeatedly follow the Whitestarts.

If rufopectus will follow other species in this particular area, which is so depauperate in both species and individuals, then they must have a definite following response. I.E. the behavior of the local rufopectus is qualitatively different from that of the birds of the same species near Quito.

8:00 V³ When the group first appeared, a Sciaen came and perched a few feet away. Then flew away. Again, very Drydena-like.
Incidentally, all the rupinches seen here have had white spots on wings.

8:05 See single Cotinga above. Same place as before 8:45 + in 8:45. Slightly different area. See single rupincha in low scrub. Edge of land slide. Apparently alone.
Apparently rupincha prefers more scattered scrub than the PL or the PR.

8:11 Then I see that the rupincha is really a pair. One or both utter(s) Twitter Quittings.
I wonder why I haven't seen any B. nigrocruciatum around? There are quite a lot of bamboo around. No spots.

8:15 See single Tyrannus type Perched on low branch mingled around growth and not far from above.

9:12 See single Sooty Thrush alone.
9:19 See pair Yellow bellies in tree edge low scrub. Along edge.
9:23 See pair Ammodramas ruber, probably with other birds, lower edge tree edge low scrub on landslide.

Seeing 10:03

NOTE. The observation of rupinchas in a mixed flock this morning really was very important. If I ever found an area in the Western or Central Cordilleras with a depauperate fauna in which the species behave as they do in Quito, I might have to revise (or drop) all my hypotheses about frontiers, invasions over gaps, etc.

Incidentally, it might be a good idea to stop using the term "invasions over gaps", and to use "sudden invasions" instead (???)

The term "sudden invasions" may be contrasted with "sudden invasions".

It rained after lunch. Later when I start out for the forest at 2:00 pm. On the way up, I catch brief glimpses of birds in tree-tops. But nothing like mixed flocks seen April 30th.

2:42. See single "Acorn" Woodpecker alone

See hints to dense forest as I reach woods a few feet below Parula its. Woods full of "Acorns". Also lots of small birds which I haven't identified yet. Altitude here is 5550 m, 8190 ft

16 2:58 See group of 4 cyanocephala. In low trees, among second growth, edge forest. Very noisy. Lots of hovering by blue song sparrows. Parula in flight. Definitely alone. (There is a large Buthorix - like flycatcher in one of the trees visited by the tanagers. But the two species seem to ignore one another. Flycatcher does not follow when the tanagers move on.)

"Acorns" all over the place. I won't record them unless they show some interest in mixed flocks. Surprisingly enough the "Acorns" are making many flycatcher flights.

49 3:00 Then a diffuse flock in long strip mature forest. Includes lots of flycatchers and tree-creepers, 1 Red Woodpecker, 1 Yellow-faced Woodpecker, at least 1 Chlorospingus canicularis, 1 Blue & Black, contains others. See creepers in lead part of the time. The Blue & Black flies off after only a minute. No one follows. Flock utters lots of "CN"s. Little else. Birds ranging 20-40 ft above ground.

Two squirrels near flock at one time. One in trees to rear. One on ground at sides. Both generally brownish all over. Perhaps with slightly more rufous tails.

Flock moves on 3:15 pm

Now everything very quiet and calm.

3:13pm The weather is perfect now - and there is no sign of life anywhere! I think that it is quite well established now that good weather (a sunny day - not too hot) has a depressing effect on animal life. (I don't know the effects of strong wind or rain - at least not too much.) It is further evidence that there is no silver lining to the cloud. (The Eastern Condors and the flocks of the birds.)

Remarks: Both the noisy group of cyanocephala and the mixed flock seen when I fed around here this afternoon were 'after-effects' of the preceding rain and/or cloud cover. But with probably stimulus intra-specific flocking.

The 'Acorns' are still around everywhere. But they don't seem to be really flocking together. At least not forming groups larger than pairs or families.

Some bird songs starting 4:23 pm. A couple of birds uttering "ju-ju-ju-ju" phrases. One of the Whitestart species ???

Nothing more. Leaving 4:48 pm

Just as I start to go, see Cy in tree, 30ft up. Apparently looking for insects in bark and moss. About 6ft from a pair of "Acorns". One of the "Acorns" flies up, attacks, and chases the Cy! Cy comes back. Now I see there is a pair of Cys. Three more times, during the next few minutes, one of the Cys is supplanted by an "Acorn"!!! Obviously hostile supplant. And each time the Cy comes back to the tree to resume feeding. Does nothing but probe into bark large branches. No attempt to pick insects off leaves. (And there are no flowers in this tree.)

Obviously, 'Acorns' do not like being forced. There are no...
they should object to by personality

Leaving again 5:00 p.m.

On the way back, see single Sooty Thrush alone. And another 5:17.

21

Then see single S.T. Kinglet. See 2 more Sooty Thrushes. One of them apparently alone.

May 4, 1922
R. B. Thompson

Arrive top mountain 3:50 a.m. Just light. Snow not out yet.
Clear. Cool. Windy.

Scam

43

Hear Scans "Sung" up here at very top

Also see single S.T. Kinglet alone

Not much song. Some Thrushes and sub-arctic

Scam

See a real Scan display flight. First one seen this trip. Perhaps
is the Scan here are in full breeding condition?

See single Sooty Thrush alone 6:01 a.m. On log at top. Dark
eye ring

No trace of Luf-like song

Summit here is 9500 ft according to my altimeter now
2980 m. according to the Rockfeller altimeter

See another single Sooty Thrush alone

172

6:13 a.m. See mixed flock. At least 3 Blue & Blacks

Scam

174

& Yellow-bellies Feeding small trees top alpine scrub, 5-15 ft above ground. Apparently taking small white flowers. Yellow-bellies uttering lots

of least 1 White Yellow-bellied, ——— Blue & Orange. A single fairly large hawk does not join the group.

6:45 p.m. 6.41.20

Blue & Orange and Yellow-bellied seem to be the only songers which come up into the sky. ——— with appreciable frequency. See another single throat alone. Sight very near.

6:50 p.m. 6.51.20

6:55 p.m. 6.56.30. See single Cy (definite) alone. In tops trees edge of forest and upper sub-tropical forest 2000 ft according to my altimeter. Apparently looking for insects, larvae and things. Silent 15-22 ft above ground. Flies off almost immediately. Then I hear burst Cy-like Twitter so near distance away. So Cy is orange definitely higher than Albi's!

6:58 p.m. 6.58.30. Going down the road to where the forest is higher and most of the sound falls over 7:00 a.m. but not again.

See single fairly. However alone. And another. And another. See a couple of Ocellulars alone 7:10

7:20. See single Blue & Orange. In mature tree 20-25 ft up. Fil cut. There is another small bird in adjacent tree, 10-15 ft away. Can't tell if it is reacting with the Blue & Orange or not. But then the Blue & Orange goes down into lower. I call. 4-10 ft above ground. Other bird does not follow. So now Blue & Orange definitely alone. So perhaps not absolutely obligate commensal!

7:25 p.m. 7.25.30. A little further on, see single Cy alone. Filtering "Tut"s. 15 ft up in small tree. Just above where first of Albi seen! Then it, apparently (from sounds) flies into tree 20 ft away, where there is a Yellow-bellied.

7:30 p.m. 7.30.30. It is quite possible that this Cy, Yellow-bellied, and the Blue & Orange are members of a diffuse flock. Or, at least, in process of assembling to for

in a mixed flock.

See more single *Geothlypis* ✓

17:26

17:25 Further down road see single *Geothlypis*

same individual as before. Following it for a while in dense and open
thickets upper sub-tropical forest. It goes in and out. Definitely alone.

Alb

Then it is joined by another bird. *Geothlypis* Blue & Orange? Then it is followed by 2 *Albs*. Then 2 *Albs* fly off in another direction. Blue & Orange fly → 2 *Albs*. Both disappear.

50

Then see what is apparently single *Geothlypis* *superciliaris* in low-mound growth across road. 9:25 ft. Yellowish. 20 ft. Apparently alone (Except for human ground 5 ft away. No 2 species appear one another).

It is cold here this morning.

7:50. A single pair *Alouatta* *torquatus* region fairly old in growth. Definitely alone. They "web" me. "hat" notes, howling a protest. g, TF's, perhaps TV, with CR and H. H.

Then see single *Geothlypis* *superciliaris* alone.

See single squirrel 8:10. Definitely alone now. But not far from where large mixed flock was seen the day before yesterday. Moderately small. Small rounded ears. Head, back, sides, outer sides limbs yellowish-grey. ish-brown. More rufous underneath and inner sides limbs. Also tail. I wouldn't be surprised if all the squirrels I have seen in the Andes belong to the same species!

Everything very quiet 8:40 a.m. Sun out.

See another single *Geothlypis* *superciliaris*

9:03 a.m. Back to upper sub-tropical forest just below TV station

54

4 *Agoutis* - types fly by, from tree-top to tree-top. Alone.

There are mostly yellow. Feeding on branches of some clinging to trees
10-20 ft up. Same as those at Cap near Nevada. This undoubtedly
is the same as the one seen at the same place this morning.

9:25 See a brown bird feeding on flowers and tubular flowers which
are common about all over the P. in the region; but which the lo-
cal *Sylvestris* seem to ignore.

See single Yellow-bellied among them near low exposed second gro-
ve with dead brush piles. Only a few inches above ground most of the time. No
feeding seen. Following back. Note.

9:45 Alpine scrub & forest below TV station. Area where Cy seen
first this morning. Hear *Sylvestris* song. White-throats and Junco
Sungers perfectly typical. Cy. But *Sylvestris* Notes "never seen". No trace
"Tut" or "Tut". *Sylvestris* also seen & heard — but it must have been
in Cy.

I must say that I do not understand the variations in songs of
Cys and Coers different areas.

There are single Yellow-bellied along
10:05. See single darkish *Diglossa* in low bush, right at top of
mountain. *Alba*.
Leave 10:15 a.m.

On way down, rising up tall second growth on old slide, see
mixed flock. Includes at least 2 *Ammodramus* adults and 1 juv. same
species (Bogging). Probably, in fact, includes at least 5 or 6 *Ammodramus*
Also a Yellow-bellied, 1 Yellow-faced *Phylloscopus*, 1 *Chlorospingus can-*
92 *icularis*, 1 small *Ammodramus*, 1 small *Ammodramus*, 1 *Sitta*. Probably
also 1 or 2 *Wcc*. Yellow-bellied definitely in lead. *Ammodramus* follow-
93 ing after them. The rest trail along behind. All 5-15 ft above ground.

nd. Flock as a whole noisy. Lots of "21"s. Also for 5 min. or so
beginning very loud and constant. 8700 ft.

See group again a few minutes later. Yellow-bellies 100 to 150
disappeared. Now the Cyanocorpus are in the lead.

Group very coherent. All in a line together and moving rapidly.

Disappeared in 10 min. or so.

Follow group a little further. It had disappeared but has re-
appeared. Also see that there are 2 C. cyanocorpus with group. At
one point of WCC in lead, followed by Yellow-bellies, followed by Cyanocorpus.

Group disappears from sight 11:30 a.m.

94 Going for a walk this afternoon. Reach region where second "GC
cave" seen the other day 3:15 p.m. 8250 ft. Fog coming in. Get bad
view of mixed flock in tall trees, apparently mature, edge pasture. Most
birds 30-40 ft up. Unidentifiable. But with the flock is (are) 1 or 2
GT's. Lower than the rest. In branches 20-30 ft up. These GT's certainly
are not the leaders of the flock. Follow the flock.

After flock leaves, I see there was a squabble in one of the trees in which
all the birds fed. Several species. It did not follow the flock, at least immediately.

I suppose that one of the principal advantages of mixed flocks
in a very humid mountain environment is that the members have a better
chance of seeing (as well as hearing) predators. A flock must be able to see
further and wider in a fog than a single bird.

3:45. See a single Sooty Thrush alone.

3:53. A little farther along road. Catch glimpse another mixed
flock. Includes at least 2 Cyanocorpus, 1 Cyanocorpus, probably others. Also

100 ✓

1. Yellow-faced B. - start to the road. Many flock move off and are
appears

4. 10 am. Low overcast. Another mixed flock. In road growth
some including Chrysomitris and some in mature trees along side of
road. Myiophobus seen, all in Chrysomitris and Myiophobus species:

- 101P at least 3 Chrysomitris (pink) - about 20 ft. at least Myiophobus
 - 111 Myiophobus (pink) - about 20 ft. at least Myiophobus
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After some minutes, the flock split up. The presumed Hemispungus
flew across road. Continued feeding in very low scrub. Moving
in same direction as rest of flock still across road. The presumed Hemispungus
certainly were followed by 1 Whitstart, but apparently nothing
else. And the Whitstart soon left them.

After some minutes more, the presumed Hemispungus flew back
across road. Apparently rejoining rest of flock. But this time I lost
sight of the whole group.

It was quite foggy throughout the whole period I had the group under observation. Also warm and muggy. There would seem to be ideal conditions for the formation of mixed flocks.

I wonder if there are any special interspecific preferences involved in the Cnemidophorus - Alouatta group canicularis relationship? The two species are remarkably similar in coloration, and not very dissimilar in pattern. (The presumed Neomyscus superciliosus might also fit into this tight little group.)


I wonder if the Bushy Flycatcher has a special interspecific preference for Cnemidophorus? (It was certainly moving right along with the group this afternoon. Nothing at all casual about the association.) It seems to me that the only mixed flocks I have seen it with have also included Cnemidophorus. Certainly it sometimes occurs by itself alone here, quite apart from mixed flocks. (I think I have also seen it alone in other parts of the Andes.)

Going down back road. Fog thickening. Black yet where "Glau" was a couple of days ago. 4:55. Find another mixed flock. Whole group of birds nipping thru second-growth scrub, 2-15 ft above ground. Including 3 Yellow-faced Whitetails, at least 2 Alouatta canicularis, 1 Blue & Black (!) Alouatta canicularis in hand. Both Alouatta canicularis and Whitetails new. A Sooty Thrush joins the group. Lands in tree 20 ft away. Then seems to disappear. From the fog, I can also see some larger birds moving thru tall trees, behind, parallel with the scrub group. Presumably members same flock. But I can't identify any of them.

"Glau" appears, very briefly, in scrub after group has moved on. Also a reddish Myiophobus. Neither shows any desire to follow group.

The mixed mixed flocks seen this afternoon have been only a few
in hundreds yards apart. They are thick upon the ground. Certainly dis-
persed much flocks occur down together here — when conditions are
right — than anywhere else I have ever been (even Chiriqui)!

It is still relatively warm and without wind, $\approx 70^{\circ}\text{F}$. And
fog is just as thick as ever!

After the fog is cleared on, I heard some fly-like songs here,
but was unable to go much attracted to them. Could they have been ut-
tered by the "flocks"? 

Leave to copm

NOTE. I hope that I have not said anything (in the pre-
ceding pages) about differences between the social behavior of birds
in the breeding season and non-breeding season here. It was the non-
breeding season when I was here in 1962.

May 3, 1965
Munchique

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

6:55 $\approx 7:00$ pm. Pruned few old mature trees amidst scattered scrub-

See single Yellow-footed Whitestart alone 20 ft up.

7:02. See single Yellow-bellied 6 ft up in scrub edge landscape.
Going uphill. See some more sooty Thrushes alone. Singles and in
pairs.

Pass area where big mixed flock seen late yesterday morning. Notting
there now 7:30

A little further on, came across group approximately 4 White-bearded Fly

cateters making a lot of noise in trees.

There also is something in the scrub below them but I don't see to be paying much attention to them. I am nervous.

Now I see that there also are a couple of Yellow-faced Woodpeckers in nearby trees. Not sure if either. One of these Whitestarts is definitely giving a lot of like songs!!! In the background of the group of birds.

Whitestarts move on. In the following 4-47

96 8:00. Rapidly passing along road. A group of birds moves across the road. In this order: the 1st group of Yellow-faced Woodpeckers. Following lots of "Tee" notes. No song. Occupied with lots of other birds. Fly across road. In this order: the 1st group of Whitestarts, 2 Thraupis cyanocapilla, 2 more Yellow-faced Woodpeckers (!), 1 Synalaxis, 1 Geothlypis trichas, a couple of birds I didn't identify, and 2 Synalaxis. All rapid. Noisy, coherent. raspinchus utter lots of "Tee" notes. Other birds quiet. (This is uphill from where raspinchus were seen to follow Whitestarts the other day. But I think that the first 3 Whitestarts and the 2 raspinchus may well be the exact same individuals. I.E. a really long-maintained association!) After crossing road, group moves on rapidly. raspinchus usually low, 2-6 ft above ground. Synalaxis so low as to be invisible. Whitestarts usually 4-15 ft up. Eventually, one of the Whitestarts gives some of-like song phrases. Then shuts up. As the group continues through the scrub, the raspinchus seem to fall further behind in relative position within the group. Note that they seem to be bringing up the rear. But they still follow steadily along in the same direction as the group. These individuals definitely are active nuclear.

8:25. A little further along road 2750m. Come across 2 adult

It and 1 young *C. turanus*. State In trees, region of scattered veget-
ation. Possibly 30-40 ft up. Adults sitting into large fruits, taking big
chunks out of fruit. At least one, which feeds young. All very noisy,
y, 111-112, 113-114, 115, and brown. State by young. Group as
a whole very noisy, conspicuous. But it is not, nothing shows any ten-
dency to join them. I suppose the species is so large that it is really intense
dancing.

Follow group for some time. Still alone 8:40

(1) Then see single *C.* in tall tree 40 ft up, singing long phrases. Some
phrases with 1st 2 "Tut" Tut to Tut. State without. Bird app-
arently alone. Contention. It is a pair or by alone. (See songs without Intro
& Notes particularly likely to be given as "Tutting"; while songs with Intro
& Notes are more apt to be given by males. State I rather think so.)

Then see single *C.* in bamboo scrub 30-35 ft from top.

109 8:35. Catch brief glimpse of *Hemiprocne superciliosa* - types
(LXXXVIII). In Bamboo scrub. Definitely, accompanied by Ruddy Flycatcher
or (LXXXVII).

9:14. See pair Yellow-bellies. Apparently alone. High up tall tree,
50-60 ft above ground.

Incidentally, it has been clear and sunny all morning.

III 9:20. Come across mixed flock. Includes 1 pair *Hemiprocne*. Defini-
tely, same birds seen earlier, 8:35. But now I get a much better view of
them. They definitely are not superciliosa. And they definitely are atro-
pilosa. Moving up and down trunks on trunk large tree, and in bamboo
thickets, 5-20 ft above ground. Very noisy, uttering a great variety of so-
unds. Still associated with Ruddy Flycatcher. In fact, now I see there are
2 Ruddy Flycatchers here. Ruddy Flycatchers repeatedly f ———→ atro-

- 113 gulls. Here also are 2 Yellow-faced Whitestarts with yellow belly. Two Whitestart f — → also present. One Whitestart → Yellow-belly. Yellow-belly seems to have group seen.

114 In some trees about 20 ft away from the rocks on the left. (The ones who got involved in some business this morning — the same ones that "Pounce" incident earlier.) They do not seem to be paying any attention to the flock. Fly off separately.

Going down hill 7:30 a.m.

9:30 See a group of 11 Yellow-faced Whitestarts in low scrub. Also hear rufous — blue bird. Not many. Nothing like group seen before.

Leaving 10:20 a.m.

NOTE: Although it is supposed to be the full rainy season here now, I have certainly had beautiful weather throughout my stay with the partial exception of the first day (April 30th).

Going for walk this afternoon. Same place as yesterday afternoon. Arrive "Glauco" area 2:10 pm. Fog seems to be coming in, but it has not yet reached this area. It is windy here now, alternately cloudy and sunny. No sign either "Glauco" or mixed flocks.

Go on along road. Hear some Yellow-faced Whitestart songs 2:22.

Reach area, near crest road, where fog really coming in 2:30.

Began to catch brief glimpses birds moving about. Also there is a slight increase in bird sounds around.

Going on over crest hill. 2:32. Really foggy here. Some bird sound.

2:40 pm. See mixed flock. Includes at least 2 Sooty Terns,

120 Ruddy Turnstone, 2 unidentified tanager types. In second growth trees along edge road and pasture.

Catching up with them. A few minutes later Sooty Thrushes seem to have left it. They are still around and still unidentifiable. Paddy Flycatcher is still there. There are lots of them. And they definitely are following.

Log lifting temporarily at 2:30 pm

177

Then as the fog is a small wood super with flock

Agitation: 28. Immediately, there is an increase in bird sounds. Increased vocalization in fog must help to keep birds together.

3:15. Two single Sooty Thrushes above single tree edge pasture. And then another (?) in similar location.

Then what sounds like Dubusia in distance 2:30 pm.

Back to work of road 3:34. Going to work in same areas as yesterday afternoon. Unfortunately, there is no fog here now. Everything very quiet. Some more bird sounds 3:30, just before fog starts to come in again.

Then fog goes out again.

Back to "glave" area 4:05 pm. Clear, sunny (altho this spot is in the shade) and (naturally) windy.

The contrast between the bird life in this area yesterday and today is simply incredible. Absolutely conclusive proof of the effect of weather.

It has just occurred to me that during foggy or rainy weather one sees more single birds as well as more flocks. I.E. the birds not only join together but also "emerge" more frequently during bad weather. Is this because they have to look for more food ???

It also occurs to me that I saw many and relatively large flocks on April 30 and May 1, when the weather was not very bad. But this was, I think immediately after a period of bad weather. I.E. Bad weather produces an aftereffect. Increased activity in order to get more food to make up for a few

A deficit ???

135

111111

4:14 There are now some birds in tree tops here. I can't identify any of them. Also One of them is a Cy. Plus one ahead of it in a large tree 60-70 ft up. Altitude here is 5350 ft. I think this is the lowest I have seen Cy in this region. Cy apparently looking for insects in branches and on epiphytes. The other birds apparently do not follow the Cy.

Cy territory here probably overlapping territory of "glow" tree

141

4:35 See another mixed flock in distant trees. Includes small warblers and/or flycatchers, at least 1 Yellow-faced Warbler, probably others. Yes! There is a pair of Ammodramus with group. At least 30 ft up in wood growth here near some mature trees.

See single Sooty Thrush alone

Leaving 5:00 pm

On way back, see pair Sooty Thrushes alone in "hedge"

NOTE: It appears that they keep rainfall records here! Looking at the record, I see that there was a great deal of rain here the week before I arrived. April 22-30 inclusive.

May 6, 1965
Humboldt

Arrive Area just below where Cys seen yesterday 5:40 a.m. Clear. Wind, but only in spots. Already light. A few Whitestart songs, but things generally quiet.

See a single Sooty Thrush alone.

A little more bird song 5:50 a.m.

Arrive by road. No typical Cy songs audible. Something resembling
 "Same same same" phrases in top tree. Cyanocycla
 Lot of birds vocalizing in scrub around here
 See another single foot. Howler alone in tree
 Whitestarts still singing occasionally. Tend to alternate with bird utter-
 ering "Same same same" phrases!

Now generally less & 5:40

6:30 From the road there is a mixed forest down hill in rather open
 scrub. But I can't see birds

More foot, Howler alone! 6:21

114 See pair of 6:28. In second growth and mature trees both 12-
 30 ft above ground. Quite noisy. But separated, quite alone

118 See mixed forest 6:31. In low scrub. Very open second growth along
 edge of road. All birds ranging 1-10 ft above ground. Group includes
 2 birds which are either Hemiprocne superciliosa or Basilinna luteoviridis
 (probably the former - as large as H. atro-pileus, crown apparently slightly
 glaucous - not pure olive, supercilious stripe yellowish or buffy, app-
 121 arently not pure white but not pure yellow either), 3 H. atro-pileus, 1
 124 Atlapetes rufinucha, 1 Yellow-faced Whitestart, 2 Ruddy Myiobates, and
 126 2 large woodpeckers. Group very coherent. The H. superciliosa or B. luteoviridis
viridis types always in lead. The rufinucha follows them particularly
 closely!!! The H. superciliosa - B. luteoviridis types are very noisy throughout
 so are the H. atro-pileus. The Whitestart sings occasionally.
 Other birds utter only "CN"s and "PN"s.

After a few minutes, the H. superciliosa - B. luteoviridis types
 fly across the road. Followed by all the other birds, except the atro-pileus

The latter remain behind and apparently disappear.

7:05. A single fly flies by then low scrub, among the flowers no tendency to join group. This is a low fly as seen yesterday. Was this bird low because it was going to nest?

7:07. 6:55. Single Yellow-bellied Flycatcher seen in low scrub. Pairs within 40 ft of flock. But (also) shows no tendency to join it.

Flock has now moved up hill. Also higher in vegetation. 15-20 ft up, in bamboo and tangles on trees. No more birds at 35 ft up! Still very noisy. But birds very difficult to see now. Going to leave group now 7:07.

7:09. See pair of Yellow-bellies alone High in trees, 40-50 ft up.

7:10. See another mixed flock! Only a few hundred yds up from the other flock. This group is enormous. Includes at least 2 H. superciliosus - B. luteoviridis types, 2 H. atropurpureus, 1 rafinesquina, 2 or 3 Yellow-bellies, 3 Head Whitestarts, 2 Cys, 1 Yellow-belly, 1 or 2 Western Tanager (one!!), 14 in full plumage, a variety of woodcreepers. Probably also at least one Emuscaper. Birds extending from top tall trees to low scrub only a few inches above ground. Possible to recognize two semi-distinct sub-groups. A tree group: Including Sittas and Woodcreepers all the time, and the Yellow-belly, the Western Tanager, and the Cys most of the time. Also a scrub group including the 2 Hemiprionus types, the rafinesquina, and the Whitestarts. But the two groups overlapped. Once the Cys, the Yellow-belly, and the Western flew down into very low scrub, only a few inches from ground (possibly joining the H. superciliosus - B. luteoviridis types) and fed there for some minutes before going back to trees.

All birds feeding on insects all or most of the time. Putting them off

leaves, growing in the etc. etc. Only one exception observed. One Cypripedium with small clusters of tiny red flowers in the apparently getting nearer, for some records.


He has a whole new way.

Difficult to tell who was leading the flock as a whole. The tree and scrub groups or sub-groups advancing parallel. I couldn't tell if one sub-group was ahead of the other or not. The H. rostratus - B. luteoventris types certainly were the leaders of the scrub sub-group. The White-throats, rupicola, and H. a. tricolor followed repeatedly. Leadership within the tree sub-group seemed to be much less constant. The Settles appeared to lead more frequently than any one else.

Perhaps the "pale-colored" plumage of the Settles is an adaptation to leading flocks (at least when no other natural leaders are present)?

There certainly were no WCC's in this group. I think that this is the first time I have ever seen the Settles here when WCC's were not also present.

The Cyp showed no tendency to associate particularly closely with the Settles. Sometimes followed Settles, but at a distance — and when there were other birds between. The Cyp may have shown a tendency to associate with the Yellow-belly (both with Blue). The Western Tanager and the Yellow-belly also may have shown a tendency to stick together (both with yellow!).

After some minutes, the two sub-groups, the tree and the scrub, split up and went in different directions!  Both disappear from sight.

COMMENT: Altho it is often possible to recognize distinct tree and scrub flocks here, they are not as well segregated as in some other parts of the Andes. There are a number of species (e.g. the Yellow-belly and the Yellow-fa

ced Whistlers) which range from very high to very low. There are many species (e.g. the GT and Cuculicops) which obviously prefer the heights and thus tend to bridge the gap between high and low. Thus the flocks here are quite comparable to the higher altitude flocks in Chiniqua.

Thinking it over, however, I must say that flocking behavior here seems to be even more highly developed than in Chiniqua.

Occasional clouds coming up 8:00 a.m.

8:10. Everything very quiet now. All the birds in the area seemed to have been "sucked out" by the departure of the mixed flocks.

All the birds except footy Thrushes! See single footy Thrush alone. Also hear some White-bearded Flycatchers. High in trees. Apparently alone.

Incidentally, when the big flock split up, the tree sub-group went down hill while the scrub sub-group went uphill.

I wonder how many flocks there are on this mountain ??? Probably less than one might suppose from reading my notes. Each flock probably covers a very wide area during a morning. And I have probably encountered the same flocks in many different places.

Well! Well! Down road a bit. See single Atlapetes brunnei-nucha in low scrub, new second growth on land slide. 2730 m. 8810 ft. Bird definitely alone. Uttering "fear" Notes (very rufinucha-like) and soft "Tut"s.

See a couple more footy Thrushes alone 8:45 a.m.

8:59. Catch glimpse bird low in very dense scrub edge slide. Uttering "fear" Notes. Definitely not Atlapetes. Might well have been large Diglossa! But appeared to be all black, without humeral patches!

Then catch another glimpse of a Black Diglossa-like bird in scrub on the slide itself 9:10 a.m.

9.17 See single cyanocapla fly by alone. In low scrub

9.20 Again later - single small black bird in scrub edge landscape.

I suppose that it is by no means impossible that both Florus and Albi can be in the same habitat (?)

Leaving 7.45 a.m.

After getting back to the Finca, I can see that clouds are piling up and the wind is increasing. The weather obviously is about to break! I have been lucky all during my stay here!

This afternoon going to take a look at the little wood where the pair of Slate-Throat-Thrush flock was seen last week. Arrive 4:00 p.m.

Sky slightly overcast, but weather very good. The wood seems absolutely deserted, except for a single Scam (which soon moves off).

4:20 p.m. Hear soft R's or Trills down inside forest. Go down myself. Unfortunately, I can't get very close (a fence in way). But catch one brief glimpse darkish Diglossa in patch low scrub edge wood. In bush with tubular purple flowers. Same species in which I have seen Scams feed. And there is, in fact, a Scam in this particular bush too. I think that the Scam attacks and drives off Diglossa !!!!!

The R's or Trills uttered here sound very much like Albi. But possibly softer and even more rapid.

Albi! Finally work my way down into forest. R's start again. The nearer I get to the bird giving them, the more they sound like Albi R's. Most are simple R's. A couple uttered when I am particularly close to the bird have one or two introductory notes. Then I see the bird. Definitely Albi! At first in low scrub under trees. Then flies to bush and small tree with purple flowers. Feeds on flowers there. Possibly also berries. Now

I am quite certain that this ♂ Albi is the same as the "fawn" I saw last week. Upperparts are sort of sooty, flanks definitely grayish. I see blue in right light. Bird feeds in tree for some minutes. Yellow R's without intro notes from time to time. Then moves down a tree.

Albi 26 Approximately 1 minute later, a ♀ Albi appears. Feeds in same tree and bush in same way. Quite silent, except for occasional "Tut" Note.

Albi This confirms what I thought before. Mated ♂ and ♀ Albi share the same territories, but they do not go around close together. (This sort of arrangement may be common in carbonaria s.l. and lefrayeri s.l. also.)

Scan Albi The ♀ feeds in the tree for at least 5 minutes, probably more. Then, suddenly, a Scan appears in a tree approximately 10 ft away. And the ♀ Albi just vanishes. I don't see her leave, but she certainly must have gone. A few seconds later, I see a Scan (probably same individual) feeding in tree with purple flowers, just where ♀ Albi was earlier. Then I lose sight of the Scan. Only a few seconds later, see ♂ Albi feeding same place! Then I see sudden chase. Scan certainly involved, but I can't identify other bird. But the ♂ Albi disappears at same time. So I think the Scan must have been the pursuer and the ♂ Albi the pursued. In any case, none of the birds returns during the next few minutes.

Leave 5:00 p.m.

The incidents observed this afternoon are significant for several reasons:

- I. It is nice to have the "glance" problem solved.
- Albi II. It was my impression, earlier, that the Albi's probably were largely insectivorous here. Probably they are. But they certainly will

take notes from some papers which "available".

III. So, order as of the relations between Scans and Albis may be somewhat similar to the relation between Scans and Barus in Bogota. I think Scans dominant. It has been Albis, or, at least, having a "discouraging" effect upon them. (Admiring it over, this is really the only plausible reason why Albis are absent from the Finca garden, which is so full of lovely flowers, currently suitable for Diglossas, but which is also full of Scans. Possibly the Scans and Albis co-exist, more or less, in the wood I visited today simply because the area is "marginal" for Scans. Certainly, the population of Scans in the part of the wood visited is much smaller, and much more dispersed, than the population in the Finca garden.)

It may be worth stressing the difference between the reactions of Albis (and Barus) to Scans, on the one hand, and the mutual avoidance reactions of Diglossini near Quito. The latter keep "out of one another's way", but they do it in such a manner that it is not obvious that one bird is retreating before another. Either they retreat very promptly before the advance of potential adversaries or (perhaps more probable) one bird does not advance until another has already left. Albis and Barus, however, tend to "linger" until it is very obvious that they are being forced "out" by the Scans.

May 17, 1965
Mundique

Arrive top Mundique 2:45 a.m. Overcast. Fairly warm. Just a little wind. Altitude, today, according to Rockfeller altimeter is 2750+

Not much bird noise. Some *intransiens*

See single hairy Thrush alone

Some small hummingbirds around, but not, I think, seen.

6:00 am. This alpine scrub here does appear to be remarkably empty of life!

6:02 Hear what sounds like a series of *Scans* display flights. In area of very steep slope, almost a precipice covered with alpine scrub. Reduced TV station. This is where I heard presumed *Scans* a few days ago. I have not seen any *Diglossini* here (which is not necessarily surprising).

6:15. Different area. Hear what sounds like *Scans* of the *Scans* vocalizations. (Long indeterminate series short harsh notes). Slightly down hill. Probably margin upper sub-tropical forest. This probably is not far from where both ♂ & ♀ *Albi* have been, and flocks with *Conocytus* spp.; but I can't tell if it is really close or not.

6:20. Hear what sound like several *Scans* same area, and slightly above (alpine scrub). Again I can't see birds. And again this is an area where I have not seen *Diglossini*. Apparently some *Scans* display flights in progress here too.

Catch one glimpse apparent *Scans* display flight Down hill. In approximate area where I am fairly sure there are no *Diglossini*.

6:26 Hear *Albi*-type R in scrub fairly near road. Then catch glimpse of bird. Definitely ♂ *Albi*. Uttering lots of R's with no trace of other notes. In thin "screen" alpine scrub between cut over area and precipice 6-12 ft above ground. I don't think that I have ever seen either *Cys* or *Scans* in this precise area.

6:38 See single Yellow-belly alone. 4 ft up in alpine scrub.

Albi This bird is uttering R's. It is my impression that the Albi up here is uttering R's more frequently now than last week. Response to a yell of good morning?

Albi 6:13 a.m. ♂ Albi & ♀ Cyb. low in scrub only about 20-100 ft from where Cyb. heard and was singing a few days ago. NOTE. In case my preceding descriptions and comments are not clear. If a male Cyb. pass over Albi territory when they are in mixed flocks. But it also seems apparent, definitely, that the Cyb. flocks (as distinguished from their ranges with mixed flocks) may also "over-lie" Albi territories. At least partially.

See single fact, Thrush alone

Albi Of course, I am using the term "territories" of Cyb. and Albi, in a very "presumptive" sense. I have not actually seen any territorial defense. I am using it to include the areas in which individuals habitually remain, at least as long as they do not associate with mixed flocks.

Albi Will! Will! Will! 6:58. There is a ♂ Albi here, in alpine scrub, who has been hanging around the neighborhood for some time. 4-15 ft up. Definitely alone. Uttering quite a lot of R's from time to time. No Intro-Note(s). Then suddenly I look up, to see a Coer (I am almost completely certain of the identity of this bird - I saw the *Diplocephalus* type bill - and the bird was almost certainly too light and dull a blue to be juv. Cy) in a small tree, only about 10 ft from where the ♂ Albi was at the time! Silent. Picking insects off leaves. The two birds seem to pay absolutely no attention to one another. ♂ Albi continues activities as before. Continues to utter R's, but no more or less frequently than before. Coer remains pretty consistently 8-10 ft above ground. Then flies off. ♂ Albi pays no attention. Feeds on tubular red flowers (so the Albi here are not purely non-nectivorous either). Then more

around a little more. Power there, and just 1500 meters, or 15000 feet or so earlier.

See the 'see' section. See must be very different from the 'see' of the 'see' and 'see' section. do not see 'see' (see)

Incidentally, in this alpine scrub, which is very different from the 'see' and Blue Ingleses must often appear in the 'see' and 'see' section. Probably, in fact, overlap. The situation here is that the 'see' is different from the 'see' tall sub-tropical forest just below.

NOTE: The Cy-like song must be a type of 'see' (see) near here a few days ago must have been uttered by the 'see'.

Everything quiet here 7:25 a.m.

See another single facty through alone.

. Hear what may be seen vocalizing not far from Cy-Cee area, but not actually, to my knowledge, within it.

7:35. See rather large hummingbird feeding tubular red flowers in meadows on which Albi fed earlier. But this hummingbird definitely not seen (has white sides to tail).

NOTE: I don't think my description above was very clear in one respect. The Cee, when it flew away, went straight to the area where I have seen Cy(s) on previous days.

Leaving 7:45 a.m.

On my way down hill, I saw a large mixed flock. In low scrub under trees near upper limit upper sub-tropical forest. Included 2 Yellow-bellies, 1 or 2 PR Attapetes, and many others. The Yellow-bellies definitely in lead.

The PR's seem to be almost (or completely) obligate commensals here.

May 26, 1925
Jarvis

Went up to a camp of 20-25 called 'Korea' at just ca 8250 ft. A mixed flock of 20-25 seen. Very little vegetation (i.e. sub-tropical-looking) forest. Types mostly mostly species of *Geothlypis*. Main forest new group includes 2 ♂ Western Tanager, 2 *Comptosia* (usual species), at least 2 ♂ of *Junco* - dendrocolaptes, 1 White-throat (probably *Ha* to-throat). Possibly others. Flock as a whole (and probably all species within it) ranging 25-60 ft up in trees. All noisy. White-throat flycatching. *Junco* - dendrocolaptes running up tree trunks. Westerns apparently getting insects off leaves (not flycatching). Westerns certainly not in lead. Most of the birds go uphill, quite gradually. Westerns follow repeatedly for some minutes — then apparently stop following. Rest of the birds disappear from my sight, but Westerns certainly remain behind. Rather surprising, the 2 ♂ Westerns associate closely with one another (repeatedly following one another) without any sign of overtly hostile movements or postures. (On this respect, the Westerns seemed very different from the Summer Tanagers I remember.)

There is intermittent fog throughout the period this flock is in view. Gets worse after *Comptosia* - *Junco* birds, etc., disappear. Then, about 20 minutes later, I can hear that there are more birds of other species not far from the Westerns. I can't see well enough to determine if these are the *Comptosia* - *Junco* birds returning, or a new group appearing. Then I have to leave.

3:30 p.m. Reach Korea camp 8350 ft - 2550 m. Fog has li

3. 3. 11. See single BT alone. Flying from tree-top to tree-top edge of clearing, 40-50 ft up. Silent

4.22. See single Blue Tanager alone. Perched exposed 4 ft up dead tree. Different species from Panama area. All black bill. White throat.

There are lots of small birds flying thru tree tops from time to time. None of which can I identify. Presumably Amphispiza and Pyrocephalus

See a single Sooty Thrush alone in tree, 30 ft up.

13. Some of these small birds in tree tops probably are members of a diffuse flock(s). See 2 xanthocephala, 1 Sooty Thrush, 1 tiny flycatcher or vireo, 1 larger flycatcher (like all gray Pewee) only 10-15 ft apart single tree. xanthocephala supplants → small flycatcher or vireo. Then the xanthocephalas move on. The other birds do not follow immediately.

4.40. See what is probably same pair xanthocephalas in another tree. 30 ft up. Now apparently alone. Looking for insects on branches. A few minutes later, in nearby tree, see single cyanoccephala. I can't tell if it was attracted to the xanthocephala or not.

4.49. See single Ruddy Flycatcher 20 ft up, scrub edge forest. Then a single cyanoccephala flies out of nearby bush into tall tree.

I still think that this is probably all part of a very diffuse mixed flock. But the presumed members of the flock often are hundreds of feet (or yards) apart!!!

Fog coming in again 5:00 p.m.

14. 5:15. Another area edge Korea station clearing. Patch of second growth, not covered by trees. See 2 Slate-throated Mistlethrushes (departs) in scrub, 5-15 ft up. Jittering "Tut" Notes. They move on to adjacent tree. A second later, 2 cyanoccephala appear in same scrub where Slate-throats had

20 I hear. Moving in same direction as slate-throats. Then suddenly 2 Cy (defunct) fly to the only 10 ft from one into which slate-throats flew (I think the slate throats are still there). 15 ft up. Cy fight with one another. Fight apparently silent. One or both fly (ies) off.

Probably slate-throats are ubiquitous here (too). But (also) parus nuclear?

Incidentally, some species has been singing here very frequently even since we arrived. I have yet to see the birds uttering their songs. But the song sound rather as I remember slate throat songs in Chiriqui. I think slate-throats may be very abundant here.

5:30. See single Quetzal above 30 ft up in tree. Apparently juv. ♂ molting into adult plumage or an adult ♀

See single slate-throat singing. Short phrase. But this is the type of song which I thought might be uttered by slate-throats.

There also is something around here which is uttering twittering songs which are much more D. glaucus-like than slate-throat song. I think there may be Cy. In any case, these songs are being uttered while slate-throats are silent.

One bird is uttering these twittering songs with 3 or 4 "Tut" in two notes before each phrase. This must be Cy. If so, the main, twittering part of each phrase is relatively long and rapid, including relatively many notes.

5:40 pm. See bird fly away from tree from which Cy-type songs have been coming. It is Cy. And songs stop as soon as bird flies.

Everything getting dark 5:47. Also quiet. Going to stop observations.

Going to work around 2000 station again this morning. Starting
5:15 am Still quite dark. Everything quiet.

First diurnal bird sounds (unidentifiable) 5:25 am

6:10. There is a single bird in the tops here. Quite alone. Looks like
some sort of Cotunga. Blackish cap. Orange-ish throat. Apparently pale green
ish or greenish yellow below, streaked with dark. Rather sluggish. Silent. Jo
s from tree to tree 30-40 ft up.

6:20. See Quetzal alone. Apparently same individual as yesterday.

6:30. Go for walk thru adjacent forest. Almost immediately come ac
ross mixed flock. In tree tops. Difficult to see, but group certainly includes
31 Chlorospingus canicularis, 2 Plate-throats, 1 Cy, one large-ish tanager w
high yellow underparts (almost certainly usual Comptosia), and a va
riety of vireos, tree creepers, and flycatchers. Birds ranging 25-50 ft up.
Now Cy utters several long phrases. Plate-throat at least one. Not over
lapping. Plate-throat f —————> group canicularis f —————> gro
up. All birds apparently looking for insects. Group sometimes coherent. So
metimes rather scattered, with individuals up to 100 ft apart.

Sun shining brilliantly 6:55 am

Reach edge another pasture. See single Footy Thrush alone. Small tree
edge forest 10 ft up. Then see single Yellow-faced Whitestart alone. Another small
tree edge. 15 ft up.

7:15. Come across what may be rather diffuse floppy scattered water
trees and scrub edge pasture. 2 Xanthocephala, 1 Cy, 2 Ruddy Flycatchers,

1 un. identified F. 2. ocean warbler in dull plumage. All moving Cy fangs. Ruddy
ies utter R. 2. (P. 2. 2. warbler 15-30 ft up. Cy and xanthocephala 30-40 ft
up. Cy 15. one direction. Kott. follows immediately. xanthocephala fly
off in opposite direction. Kott. follows immediately.

17.30 - 17.50 Watching mixed flock. A little further along edge pasture

40 e. When first seen, birds are in trees and scrub about 10 ft, just in forest. At
this time, group certainly includes 1 Atlapetes rufinucha, several tree creepers,
1 Andean sparrow and 1 gray sparrow, 2 Yellow faced Whitestarts
and 2 plate throats. Possibly also 1 Cy. rufinucha ranging 10-15 ft up.
Tree-creepers about the same. Andean sparrows 1-5 ft up. Plate-throats 10-
20 ft up. Yellowfaced 20-40 ft up. I.E. the two Whitestart species are quite
well segregated. Birds from many Yellowfaced utter a few songs.

50 Then at least some of the birds, i.e. the Yellowfaced, fly out into
scattered mature trees in pasture. They see that in adjacent trees they also
are at least 1 Sooty Thrush, 1 Comptosoma (usual species), and 1 Cyano
cephala. All ranging 20-50 ft up. Cyanocephala definitely eating berries.

Group does not seem to be making definite progress in any given dir-
ection. And all species sometimes (not always) very scattered. Difficult to
determine who, if anyone, is in lead. At different times, the rufinucha, the
Comptosoma, the plate-throats, and the Yellowfaced, all have appeared to be
in the lead.

This area is approximately 2575 m.

While I am writing this down, a number of (other) birds (re)ap-
pear in exact same area where rufinucha group seen earlier. Certainly including
1 Cy Cy fangs. No other diglossini or Whitestart audible at the time. The Cy
is approximately 10 ft up. Then these birds disappear from my sight. Less than a

Albi¹⁰
minute later, I see 1 ♀ Albi (definite) in similar position. ^{same} was seen, same elevation above ground. ^{Setting} 512°

Cy
Albi
So Cy and Albi ranges must at least be adjacent, ^{at some times}

Actually, I am not sure that all the birds I see in the clearing are not members of the same, very diffuse, group !!!

Cy
8:10. Same area. Cy singing in the top. No other diglossini or other bird not audible at the time. Then shuts up. Everything quiet this area. Red flock seems to have gone on

Cy
Sun has gone. Cloud coming up. I will move on a little. See group 3 Scoty Thrushes apparently alone. In scattered trees in part we. They "mob" me. Then fly off into adjacent forest. There certainly are some other birds in this part of forest. I can't see them, But Cy certainly among them. Utters typical Cy songs. Then shuts up.

Starting down hill again.

Cy
8:45 Come across flock edge clearing. This is opposite edge of clearing from where flock seen earlier, but it may be (largely) same flock. Lots of small birds top tall trees. Including Cy which sings briefly. Also 1 Corynorhiza (usual species) 25 ft up in trees. Then group disappears (again)

A few minutes later, see single Xanthocephala same area. 50-60 ft up. Quiet. Looking for insects. Apparently alone.

A few minutes later see Squirrel same area. 10 ft up on tree trunk. Looks like "usual" species seen before.

NOTE: As far as I can recall, all the squirrels seen in Andes, with or without mixed flocks have been quiet. Probably silent, in fact. They certainly never seem to contribute to the "general attractiveness" of mixed flocks

by adding greatly to their conspicuousness.

8:50 A little further on. There seems to be a lot of birds around here. But none close together. See single Cy flying 25 ft up tree edge forest. There certainly is no other bird seen to fly at the time. Uttering long rapid T-jitters with little or nothing in way of Intro Notes. (I think these are the type of phrases which I thought might be C's earlier this morning.) Then flies off. Back uttering more songs, with Intro Notes.

Fog approaching 9:15 a.m.

9:07. Cy singing in isolated tree in pasture. Then see another Cy feed in same tree edge forest 50 ft away, 20 ft up. Apparently looking for insects. Silent. Definitely alone. Then the Cy flies across corner of pasture into another part of forest. Passes right over Yellow-face, 15 ft up in tangle beside another tree edge pasture. No apparent reaction between the 2 birds. A minute later, singing Cy shuts up. Flies over and joins ———→ Yellow-face. Then both disappear from sight. A minute later, hear both Cy songs and Ruddy Flycatcher at R's same area.

Stopping observation 9:30 a.m.

COMMENT. It is my general impression that mixed flocks probably are common here, but, if so, they certainly are very diffuse on the average. Much more diffuse even than the flocks on the Pico de Espejo in the Sierra de Mérida last month.

There doesn't seem to be anything very panure nuclear here now. Not even the xanthocephalus.

9:50. Back Koca Station. Group of at least 3 Canguas 20-30 ft up in small trees edge clearing. Black with clear (rather lemon) yellow rumps and lower backs, and patches on wings (scapulars?). Light, whi

tree, bulls also light eyes. Very noisy and conspicuous. — molt —
 them. (Big black and yellow birds do seem to be "repellent"

10:43 Another edge forest clearing for Red-throats. In
 in brush, 2-5 ft above ground 1 with edge forest 5-20 ft up. One utter a co-
 uple of long phrases (apparently alone (although I heard others be-
 sides in trees not very far away).

12:30 pm While eating lunch, I see that there is a single Cy Sung
 20-35 ft up in scattered trees in clearing. I see a pair of cephala; and 1 adult humer. All birds fly from tree to tree at irregular int-
 ervals. Sometimes 2 species will be in trees only 15-25 ft apart from one ano-
 ther. But it is quite obvious that no species is paying attention to any other.
 Absolutely no tendency to follow or join one another.

See single Sooty Thrush alone. 1 ft up second growth scrub.

I shouldn't be at all surprised if the mixed flocks here were in part
 own of "disolution" because the breeding season for a lot of species has begun
 or is just about to begin!

NOTE: According to the VC man who is cooking for me — and
 who seems to be thoroughly familiar with this area — the Sooty Thrushes
 here congregate into large bands (apparently of their own species alone) at
 the height of the rainy season (April-May). This would seem to confirm
 some of my earlier observations elsewhere.

1:45 pm. See ♂ Turdus serranus 30 ft up in tree edge clearing.
 Then Sooty Thrush supplants ———→ serranus! Also hear lots small
 birds in adjacent tall trees. Catch a few glimpses of them. Group certainly inclu-
 des some small woodcreepers (Probably same species as in Central Cordillera —
 light throat and supercilious). Also, apparently, Red Woodpecker!

2:28 pm 8500 ft. Up hill in forest 8500 ft. High a large trogon and at least 2 other birds from same class trees. At least 1 of the other birds is Basileuterus. Basileuterus and trogon go in different directions. All 10 - 20 ft up. Ident.

2:35 pm 8500 ft. See single Yellow face. In second growth scrub, under trees, along stream and path. 5-15 ft up. Ident. Alone except for a single hummingbird (not seen) flitting about in neighborhood. The two species are paying no attention to one another.

2:55 9050 ft. Region low second growth with scattered large trees. See single Sooty Thrush alone 5 ft up in scrub.

Following in new

3:00 pm Same area. See large mixed flock, small birds in trees. Group includes at least 2 Yellow faces, 1 Cyanocephalus, 1 Guiraca, 1 Ruddy Flycatcher, some woodpeckers, others. Also lots of hummingbirds flitting about. Including Eusifera! Yellow faces ranging 15-60 ft up. Eusifera seen only low, 10-20 ft up. All other birds fairly high, 30-60 ft up. Yellow faces fly catitum. Also Ruddy. Guiraca eating green fruit. Group as a whole quiet. But both G and Cyanocephalus sing occasionally. Not overlapping.

Group as a whole quite coherent. But not making very rapid progress. All birds doing a lot of flitting back and forth. Once, Cyanocephalus seemed to be in lead. Once, the Whitestarts.

Group stays together for 15 minutes. After about 10 minutes, group of Caciques (same species seen below — XXXXX) flies into trees about 200-300 yards away. Make a lot of noise. Perhaps disturbed by me. Then group of Caciques joins —> group other birds. The latter do not react in any conspicuous way. Caciques fly away again. Then Caciques fly —>

(2)

group of other birds again. This time, the other birds are -
They certainly leave, but I can't see where or how. Presumably
Cauques??

Cauques stay around for some minutes. Then start to move off. As they go, I see a pair of White-birds (1 sp. 8, 1 ft up in dense second growth scrub, more or less under trees in - 5 ft. long - and other birds had been -
relax. Quite possible they had been there all the time.

Reach area 2850 m., 9375 ft. = 4:45 pm. Fog has lifted. But I seem to have lost the path! Forest here obvious. Still some - 15 ft. tall - 10 ft. wide -
scrub. But trees rather far apart.

3:55. See single Yellow-belly in tree uphill. Probably 30 ft above ground. Sitting quietly and preening. Only 1-2 ft away from the Yellow-belly is a single Diglossa. Light is bad, so I can't be absolutely sure of species, but it probably is Cg. Also sitting quietly preening. Diglossa flies away. A minute later, Yellow-belly does too.

Starting downhill again 4:03

4:20 pm 9125 ft. Not far from where large mixed flock seen earlier. Probably large same flock. Region second growth scrub and a few trees. Just see 2 Yellow-faces in scrub, 10 ft up. 2 Whitestripes f. -

Yellow-faces, at same level. Then a whole group of birds appears. Definitely following Yellow-face - Whitestripe group. But 20 ft below. In scrub. 15-30 ft up. This is "main party". Includes 1 G, 10 WCC and 1 ♀ WCC, at least 3 Cnemidopus, 1 Eumyza. At least 1 H. atripileas & -> group. Stay in scrub 3-6 ft up. Not bamboo (there is no bamboo around here). Birds only moderately noisy. No song. WCC's picking insects off leaves. Other species apparently looking for insects in a number of

diff. + road. I see Surfscaper supplants → ♂ WCC. Once, WCC's
I → twice WCC's → Cy!! It looks as if WCC's here
may be on the way up.

93 11/11. This time group goes 30-35 ft. up on old tree. Gradually lost sight
just as it is out to design or competing. I see that there is a large tree
up following 30 ft behind. I am interpreting up the rear.

14 ADDITION: There also was Megascops with "main party"
Jackas which was very coherent. Birds not far apart. And making
definite, steady progress in one direction. Up hill. Presumably going to roost.

94 11/11. See 6 up ridge. Low station during, 8:30 ft, 5:15 a.m. See 1 Cy
flying 30 ft up in tree in pasture near forest. Yellow and Whitestarts and
some warbler(s) or vireo(s) in nearby trees. Then all fly off, definitely in a
group, into another tree 50 ft away.

Mixed flocks seem to be becoming more coherent now! Reversal to non-
breeding condition in evenings???

See a pair of Scrub Thrushes alone 5:21.

Get back to house 5:40 p.m.

May 28, 1965
Jarallene

Going up hill same place as yesterday afternoon. Delayed starting
because of rain. Rain finally stops, but clouds remain very thick and light
is atrocious.

On way up hill, ca. 6:15 - 6:25, see a number of dark birds in scrub.

1. Apparently alone. Apparently single. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

Reach approximately 1000 meters long. ...
on yesterday 6:45. ...
of all sorts of ...
of yellow ...

6:45. View from ...
hesitant or ...

6:50. Just as light ...
with where ...
1 ft up in scrub. Definitely alone. ...
SHN's. Very loud and hard. This immediately attracts hummingbirds. ...
species to arrive is moderately small, with a medium short straight bill. No ...
Bronzy greenish above. Buff below. Dark cap (either brown or bronzy green).
Prominent white streak behind eye, extending downward and backward. ...
ment dark patch (streak) on cheek, also extending downward and backward.
This dark patch or streak probably is dark brown. Tail fairly long. Slightly ...
rounded. All or most tail feathers with terminal buff patches. Then a single ...
♀ Albi is attracted to group. This bird lands about 1 ft from Whitestripe. ...
its silent. A hummingbird I makes repeated "unlubricated" attacks on the ♀
Albi! Albi just moves away each time. (Most of the attacks are short forward ...
rd rushes. Not swoops.) Then some more hummingbirds appear. 1 or 2 more ...
e I's. Also 1 or 2 individuals of another species. Larger than I, with a longer ...
straight bill. I shall call this II. Largely dark metallic green. With ...
very conspicuous white chin and throat. Also very conspicuous white under ...
to tail. One II swoops at ♀ Albi! Then ♀ Albi disappears. Whitestripe ...
and hummingbirds remain. Within a couple of seconds, a II appears in

birds: White-trope. Also silent. Stay around for couple of minutes. Then
fly off into scrub tree and disappear. During all the time the Cy was at
-and the hummingbirds appeared to ignore it. Possibly Cys are too large to
be very attractive prey for attack. But after the Cy left, the war-
n hummingbirds began to fight among themselves. Probably both inter- and
intra-specific as raps and chatters, and I think that some of all of the hum-
ingbirds also made inhibited attacks on the White-trope (which is larger than
the Cy) during the general commotion.

White-trope eventually moves off, but hummingbirds remain. Still dis-
puting. Quite noisy.

Incidentally, the White-trope may have been juvenile. Its supercilious
stripe was yellowish. (But I am sure of my identification. Bird quite different
in shape, from Basilinna.)

23 Hummingbirds stay around for some minutes. Then a Myiophobus appe-
ars, briefly, 5 ft up in bush 20 ft away. Apparently attracted by hummingbird
sounds. Utters several R's. Louder and probably harder than all or most Alb
R's. Then disappears. (This bird probably also gives Orange cap incomplete.)

At which point, 7:12, rain begins to come down in buckets and I ha-
ve to suspend observations. Walk on down road a little.

all 24 7:20 See another of Alb's, 4 ft up in scrub-below-trees. Definitely not
same individual seen before (too far away). Silent. Disappears.

all 25 Alb's may be common here! (Incidentally, I have seen more red, pink
and orange flowers around here than anywhere else in the Galapagos.) It is in-
teresting that they did not form mixed flocks yesterday. Alb's do seem to be less
allo-gregarious than Cys - at least in Central and Western Cordilleras.

When I first arrived here this morning, I heard a number of R's at

various other birds think that they are all dead. I have
seen flycatchers, Thryspus, etc. Others do not seem to be
Presumably not breeding.

During the first 15 or 20 minutes of rain. I heard
of Cy and Yellow for some time. It was raining. It was
continued.

Rain stopped 17:30. It was raining again 3:15.

NOTE: As far as I could tell, the birds were not to form mixed
flocks during this rainy spell. But I cannot be sure. There was no
burst of bird sounds after the rain. No singing etc. of Cy, Thryspus.

8:25 am. Things in general are quiet. Still very cloudy. Some
approaching. It is possible that many birds have been "washed out" of the area
with a mixed flock which I missed.

Going further uphill. Along a different path from the one follow-
ed yesterday.

8:45 am. 2800m. Region of heavy forest. Not very high. With
lots of scrub-bulge trees. See another mixed flock. Group includes 2 flycatchers,
at least 1 Pf, flycatchers, at least 1 Bombus, LYXX, at least 1
fitti, several tree creepers (species seen before - light throat and supercilious),
a pair of flycatchers (species not seen before), and at least 1 H. atropileus.
The H. atropileus is in lead at least part of the time. All birds ranging 15-30
ft above ground. Nothing in tree-tops. Birds moderately noisy, but no song.

Although I know that there is some bamboo not far from here, there
was none in the precise area where the flock was moving. As far as I could tell,
this did not bother the atro-pileus. I & the atro-pileus here seem to be less
bamboo-loving than in some other parts of the Andes.

(2)

There is a terrific downpour of rain begins. (Rain is so violent, for I don't go - then up - But rain 25 ft up, a heavy rain lets up a little enough - just during both rain - subsequent let up.

Then another - a downpour begins. So I start downhill. Rain is without let up. But for time, all the way down hill through the forest I hear lots and lots of birds. It seems as if every single bird in the whole region is working up. At last between 10:00 a.m. and 10:30 (when I get to the bottom of the forest) I also catch glimpses of at least 3 mixed flocks.

So it looks as if the birds here are like the ones on Mithelique. (And weather seems to stimulate the formation of flocks here!! (Nothing else, the onset of precipitation during at least some heavy rains will tend to bring birds together.) As noted yesterday, it is quite probable that many of the birds at lower elevations, down by the Kona Station itself are coming into breeding condition. But the nature (or "difference") of flocks seen yesterday may have been largely due to the fact that the weather was good yesterday, without rain and with long periods of sunshine. Certainly, all the flocks seen today were very coherent. Birds keeping close together and moving steadily in one direction. (And, incidentally, without any overt hostility between members.)

The 3 flocks seen on the way downhill were as follows:

115 XIV 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508

140 from pastures. Very large group (approx. 20 birds) seen in dense
 and rather high scrub growth in ravine along Tam. Grey
 & Baileuterus and/or Thunbergia up to 2 ft up. Some wood
 probably others. All ranging 5-10 ft above ground.

GENERAL COMMENT. All in all, the birds of the part of the Andes seem very similar to those of Munchique. I think the whole of the northern part of the Western Cordillera may be essentially "uniform" (at similar altitudes). This is nice to know. It means that I probably am safe in "extrapolating" from observations in one area to conditions throughout a like region.

1:00 p.m. Korea Station. Cloudy but no rain or fog. See single Paddy Flycatcher 4 ft up in scrub. Silent and definitely alone.

Then fog comes in! Really very difficult to work today.
 Going to see if anything can be done this afternoon.

143 2:15 p.m. Upper edge Korea pastures. Just where paddy site forest begins just below fog level, you see large mixed flock. When first seen, group includes at least 3 or 4 Synallaxis (all same species — probably the "all-rufous" species — but it looks a little duller than I remember it from Peru).
 144 1440 and Alcedo Bonita, Baileuterus LXXXI, 2 slate throats and 2 Yellowfaced, 1 Cy, 1 slatey-blue Finch with thin bill ("Amnospiza" type),
 151 and Comptosia. Group noisy but no songs. All in scrub and small trees. Yellowfaced usually 10-25 ft up. Slate-throats 5-15 ft up. I think 2 species are stratified here in the same way as in flock seen yesterday (although the individuals involved certainly are different). Synallaxis 2-6 ft up. Baileuterus about same level. Cy 4-10 ft up. Comptosia and Amnospiza type 10-25 ft up (not together). Group is quite coherent, insofar as all the birds are quite close together, but it isn't making much progress in

any green down. Difficult to tell when leading. Probably *Synchlora* as
d. Yellow. Different from *Panorthoceros* ~~XXXX~~ \longrightarrow Yellow fa-
ces.

was 1 day in among the birds with flock of Yellow-jacks chasing and attacking something. One of the pursued individuals is another (kind) Yellow-jack or a Starthroat.

132. Group gradually moves uphill. Then a single ♀ Aler appears toward rear of group. Hops thru scrub 4-5 ft up. By this time, I have lost sight of the Cy. Certainly the Aler does not come anywhere close to the Cy.

When group goes upland the Squallarius and Parus probably stay together. But I am not sure for many of the other birds follow them. Certainly the Comp. procne does not. After the other birds disappear, I see the Comp. procne still around, gathering in an interesting way. It includes many small birds. So this is another species breeding here now!

Go along forest path a few hundred yards. See single sooty Thrush
h and tinamou together on ground! Only a couple of feet apart. Fly off together
in same direction!!!

Settling 1507 3:10 pm 8700 ft Forest in ravine along stream, see another mixed flock. Includes 2 Yellow-faces, at least 1 Setti, and a couple of small warbler-like birds which probably are a pair of WCC's. All 15-20 ft up in trees. Quiet. Apparently all looking for insects. Yellow-face supplants → one of the warbler-like birds, probably the ♀ WCC.

100 3.22. Just a little bit further on. See pair H. atrorileus 3 ft up in scrub by stream. Uttering SHN's. 1 Sooty Hummingbird \longrightarrow atrorileus us. Then atrorileus fly off. Hummingbird does not follow.

31 3:35 p.m. 8900 ft. See group 4 Synallaxis low in scrub along edge

c of path. 2-4 ft up. Many. Probably many more
e individuals, in fact. But now, apparently alone.

Have reached fog level now.

Up where first 2 birds seen this morning 3:45

Fog lifts 3:58 pm. Can hear many birds in neighborhood
t sound like a flock.

See single Sooty Thrush above. 4:00 pm.

Birds in general certainly very much quieter after rain than dur-
ing last rain this morning!

4:25 pm. 9300 ft 2850 m. See single Yellowbill above 25-35 ft up
in tree in dense forest. Bird flies off. Apparently to join mate slightly downhill.

Fog approaching again. Everything very quiet now.

4:34. Same area. See pair Atlapetes torquatus. On ground. In area
palm scrub under trees. Silent. Desperately alone.

34 Then a few seconds later see pair of birds in tree where Yellowbill was
earlier. Apparently cotungas. Reminiscent of Piprida rufus but differ
from any of the latter I have seen before. Dark bill. Red eyes and legs. Dark
head and breast (dark blue? black?) Olive above. Yellowish spots on
wings. Yellow below on belly and abdomen (probably also lower breast).
Yellow conspicuously barred (not appaled) with blackish.

102 Then the 2 Cotungas fly approximately 100 ft away. I follow them
and find that they have joined large mixed flock. Group also includes 2 GT's,
105 2 Yellowbellies, 2 Yellow-faced Whitestarts, at least 1 H. atropurpureus, at least
140 1 Whitestripe, at least 1 Baileuterus XXXI. Group as a whole quiet.
Cotungas, GT's, Yellowbellies, and Yellowfaces stay in trees, 15-30 ft up.
Homospingus spp. and Baileuterus in scrub. 5-15 ft up. Difficult to

XXXXIV
See Corrected Description!

V. The forest around 9300 ft. There is not much forest. 200-400 ft below trees are shorter and more widely spaced being "Alpine scrub" - but it is on the way to getting there.

May 27, 1955
Jarallones

Delayed by rain in usual way this morning. Entering forest path going uphill 6:05 a.m.

The sun is shining now, and everything is very quiet. All I see on the front part of the forest trail is a few (3 or 4) single sooty Thrushes.

Reach approximate area Albi and Cy-WCC flock 6:45 a.m. Everything quiet except for occasional Cy and Yellowface songs, some R's, and a variety of hummingbird noises. Hummingbirds are fighting among themselves.

37 6:57. See 2 Yellowfaces silent and definitely alone. In low scrub, 2-3 ft up, along edge of path.

7:25. See single Atlapetes brunnei-nucha (definite) 3 ft up in low, thick second growth scrub. Silent and alone. Very near where Cy-WCC flock seen a few days ago.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

39 7:44. See pair Ruddy Flycatchers in trees. Apparently alone.

Then see squirrel, brown with red tail, 35 ft up in tree. Making a lot of noise. Chattering. Two sooty Thrushes fly in one direction, while squirrel moves in another.

Starting downhill 7:55 a.m.

41 On way down 2675 m. See pair Agreomys-types (same species as on

100 (New species) also along forest by stream 30 ft up a small tree
8:50 a.m. just before reaching upper Forest station. See mixed
flock in mixed with leaf and bare wood along stream. Not far from where
mixed flock with all species of Alouatta yesterday. Probably partly
185 same flock. Group now includes at least Alouatta, Alouatta,
190 at least 1 Alouatta & 1 Alouatta (seen on the very building level),
WCC, at least 1 Alouatta (seen on the very building level),
201 2 Alouatta, and several species of Alouatta - Alouatta
(but definitely no Alouatta). Group as a whole noisy. No definite con-
tent leadership. All or most species ranging 3-20 ft above ground.
Alouatta and Alouatta usually relatively high. Alouatta, Blue &
Black, and WCC usually medium. Alouatta ranging high to low. Fre-
quently down low, 5 ft up, in the "stratum" which is "typically" Alouatta
throat Alouatta, when they were down this low, the Alouatta was nowhere
near them. I.E. the 2 species of Alouatta here may have a typical
"mutual avoidance - inhibition" relationship of a "diagonal type" !!!

REMARKS:

I. The "habitat requirements" of Alouatta spp. at higher el-
evations seem to "correlate" with those of Alouatta spp. Neither is very abun-
dant in very dense and very high (i.e. very humid) forest.

Most of the brightly colored allo-gregarious tanagers also seem to
be somewhat rare in such environments.

All 3 groups differ from the "typical bush-tanagers", e.g. such
forms as Alouatta and Alouatta, (generally olive, yellow, brown, bla-
ck, etc.), which do seem to be relatively abundant in thick, high, humid
vegetation.

IV. The areas ca. 8300-9300 ft where I worked on the Sierrita birds are more humid, on the average, than all or most of the areas of elevation where I worked on Munchingas. Erizetes, ore and allegre seem to be more abundant in the latter areas than in the former.

V. If there is any difference between the birds of Munchingas and those of the Sierritas in degree of allegre (which I very much doubt), then the birds of the former are more allegre than those of the latter.

TOTAL =

WMS

July 22, 1965
Valley Rio Hondo

On slopes leading up to Bonanza Frontino 8900 ft. Second growth with scrub between mature (old upper "sub-tropical" type) and pasture. Starting observations 11:00 a.m. Clear and windy.

See 3 Yellow-faced Blackstarts engaged in obviously hostile chase. Very noisy. 2-6 ft up in scrub. Apparently alone.

There are 2 Ruddy Flycatchers 15 ft up in adjacent small tree. But I don't think that they really are associating with the Blackstarts.

CORRECTION. There is a mixed flock in adjacent forest edge. Includes at least 2 *Cnemidopus*, several tree-cuckoos, others. Probably also at least 2 Blackish flycatchers, which I am not able to identify. The Blackstarts and Ruddy Flycatchers seem to be hanging in the neighborhood of this flock — sort of flitting around the outskirts. Flock as a whole is quite diffuse, but appears to be a "real" social group, not a "coincidental" aggregation.

Leaving 11:30 a.m.

Starting out again after lunch. Going uphill.

1:15 p.m. 9150 ft. See single sooty Thrush alone. Silent. Flying across pasture into neighboring forest.

1:20 p.m. 9300 ft. See single Horn Woodpecker, alone. Flying from dead tree to dead tree in pasture.

Then see single sooty Thrush alone. 2 ft up in scrub edge pasture. Silent.

1:30 p.m. 9400 ft. See Brown and Ruddy Flycatcher. SEE TODAY'S NOTES ON MIXED DIGLOSSINI. A few minutes later, see an

(44)

presently single White-bearded Flycatcher in same tree where Brown and Ruddy seen earlier. 10 ft up.

A few minutes later, see single Sooty Thrush alone in adjacent tree. 15 ft up.

As far as I can tell, these birds are not members of the same social group.

CORRECTION: They probably are part of a mixed flock. A few moments later, and a few feet further on, see single PL Atlapetes, one B. nigrocapitatus in bush. Also 1 Ruddy Flycatcher. Ruddy, almost certainly same individual seen earlier. And I imagine that the Brown and Whitebeard seen earlier probably were attracted to this group at least temporarily. PL ranging 10-15 ft up in bushes. Apparently feeding on clusters small yellowish white flowers (eating them whole). B. nigrocapitatus ranging 2-15 ft up. Possibly also feeding on same flowers and picking insects off leaves. Ruddy making flycatching flights, 6-13 ft up. All individuals quiet. PL probably in lead. B. nigrocapitatus definitely f —————→

The PL, nigrocapitatus, & Ruddy eventually disappear from my sight. A second later, a hummingbird XII appears in bush where group was earlier. Feeds on yellowish white flowers in usual hummingbird fashion (sucking nectar). Then flies off. Another second later, Scan (definite) appears! The hummingbird XII disappears just before or just as Scan flies in. Scan perches a second. Then flies off. (I.E. it did not feed on the yellowish white flowers).

A few moments after Scan disappears, Brown (re) appears in tree 15 ft away. 8 ft up. Utters several song phrases. All Twitter's; but very rapid, mechanical, "un-musical". Almost R's. As

far as I can tell, the mixed flock is some distance away by the time the Brown (re) appears and sings. No other deglamine (or hummingbird) was visible or audible during Brown songs. Brown only stays a minute and then flies off.

NOTE: Some minutes earlier, I saw a Brown (presumably same individual) in bush that was visited by Sean and Hummingbird XII I.E. the territories of these 3 species are at least partly overlapping.

NOTE: There were several Acorn Woodpeckers flying about in the same general area when the mixed flock was visible. But they did not seem to pay any attention to the mixed flock, and none of the members of the flock seemed to pay any attention to them. (I.E. the Acorns here probably behave like the other members of the same species near Thunbergia)

2:08 pm. Only a few feet further on, see single B. nigrocrinitatus Presumably same individual seen earlier. But now apparently alone feeding in bushes edge forest 8-10 ft up. Silent

2:10 pm. A few feet further on. Come across pair Yellow-bellies 20 ft up in tree feeding on small green fruit. Uttering CN's. Acorn Woodpecker j —————> Yellowbellies. Then Acorn flies away Yellowbellies do not follow. Then Sooty Thrush j —————> Yellowbellies! (This reaction quite definite. Thrush lands only 6 ft from tanagers. Then birds disappear from sight.)

I think that this group may be associated with PL - nigrocrinitatus seen earlier. If so, flock as a whole is very diffuse.

There apparently are some other birds in nearby tree tops. Probably members same flock. Uttering "CN"s

2:20. Same area. See 2 Green & White hummingbirds fighting furiously, but retreats in air. They also may be "numbers" of the group.

Then see single Black Diphysa, presumably Brown, 20 ft up in tall mature tree edge pasture. Possibly the same Brown seen earlier?? If so, it definitely is associating with other species. Silent.

Also see single Sooty Thrush only 20 ft away, 10 ft up in bush. Possibly it also is associating with groups.

There are lots of Acorns around here. Sometimes close to other birds. Once Acorn supplants → Sooty Thrush. Certainly, the Acorns are not what you would call "furious".

There also is a single Ocellularia around in the neighborhood.

Several hundred yards further on. 9575 ft. 2:35 pm. See pair of Sooty Thrushes alone, top tall tree edge forest & scrub 35 ft up. Single Brown → Sooty Thrushes!!! Eventually, Brown moves on. Thrushes do not follow.

9900 ft. 3:00 pm. Edge another patch of forest. See single White-bearded Flycatcher 25 ft up. Heavy. Flies on. Then see single Brown in nearby tree. 40 ft up. Silent. There also are some other birds, even higher up in taller trees. But I can't identify them (yet).

Then see single Cy, in bamboo thicket, 20 yards away. Only 2 ft up! This must be another very different flock! Then see Cy high in tree 30 ft up. Not far from where Brown seen earlier. Silent. Feeding on small, round, green fruits.

Flock going gradually uphill. We follow. Can hear at least one Ruddy Flycatcher in neighborhood. Then see 2 B. microscitatus in scrub along edge road. 1 ft up. One individual is adult. The other is juv. Juv. does Q. These birds definitely do seem to be associating.

orating with Rock. Then apparently is one of the areas where B. nigr
oculatus is common!

Then get better view of flock as a whole. Now includes at
least 2 White-throats, at least 2 Brewers, 2 Yellow-bellies, 1 Chim
oscopus, a variety of tree creepers and ferns, at least 4 Wren
s (all same species), a variety of hummingbirds, at least 2 of the
Monsoon-crested Mountain Catbirds !!! (to my knowledge, this is the
only place I have seen this species in mixed flocks), and at least
one Tit, in addition to the nigrooculatus. Yellow-bellies
f —————> group at least twice. B. nigrooculatus f —————>
Tit f —————> group at least three times. I can't tell who
is (or are) the leader(s). The B. nigrooculatus stay in scrub, 1-3
ft up. The Yellow-bellies are from low scrub, 1 ft up, to tall
trees, 25 ft up. All other species stay in trees, 15-30 ft up. Tit,
at least, is feeding by pushing insects off leaves. Group as a whole
fairly quiet. Lots of "CN"s, but little or nothing else.

Group eventually turns and starts down hill. At least
at this stage, it is fairly coherent. Birds 10-30 ft apart. More co-
herent than any other flock seen here today.

NOTE: The reason I am fairly certain that all or most of
the more diffuse groups seen here today were definite social units is
that we also have passed thru large stretches of suitable looking
forest and edge in which birds seemed to be completely absent.

3:40 p.m. 10,000 ft. See pair of the big Butoraptes (montana
or cucullata or whatever it is). In second growth trees in midst
mature forest. Silent and alone. Fly away immediately.

Catch up with same birds a few minutes later. Now see that

there are at least 4 Butterauger. High in mature trees 40 ft up. There are also some smaller birds in same trees. Can't identify them.

Big Butterauger 1 —————> group

Reach 10,225 ft 4:05 pm. This is not far below edge of P. nanno, but forest still looks upper sub-tropical.

Getting cold and windy.

I think what looks like Black Dendroica from area very thick low second growth edge pasture. Utter Butterauger at edge, I can't identify it.

See single Sooty Thrush alone. 20 ft up in dead tree in midst low thicket.

See single Amazilia-like bird alone in low dense second growth scrub.

Single Sooty Thrush flies by. Silent & alone.

Starting back down hill 4:25 pm.

10,075 ft. 4:35 pm. See single White beard 20 ft up in tree. Apparently alone.

A little further down, see single Sooty Thrush alone edge scrub slide. In sort of bamboo scrub. Flies into nearby trees.

4:50 pm Just below 10,000 ft. Approximate area where Butterauger seen earlier. See large flock. Includes at least 2 Yellow-faced Tanagers, 1 Setia, 1 White beard, 2 White-strikes, 1 H. atripileus, 2 adult and 1 juv. Blue & Black, 1 Cnemidophorus, a variety of furnariids and dendrocolaptes. Group moving thru second growth trees, also low open scrub, in area surrounded by mature forest. ADDITION: There is at least 1 PL atropetes with group. The 2 Hemiphanes species stay low in scrub, 2

- 5 ft above ground. Whitehead stays in trees, 12-30 ft up. All other species visit both scrub & trees, 2-30 ft up. Yellow-faced consistently in lead. Presence of other species varies. Group as a whole noisy. Lots of "CN"s. R's by a tree-creeper. Two song phrases by Yellow-faced Whitestart. Group also coherent!

5:05 p.m. Ca 9700-9800 ft. Lots of Sooty Thrushes flying around alone in pasture full of (little erect) dead tree trunks.

5:10 p.m. 9675 ft. See pairs of H. atropurpureus in bamboo scrub & edge path inside forest. 3 ft up. Utter "CN"s. Apparently alone (altho there are other birds in tree tops 50 yds away).

9500 ft 5:25 p.m. Area where found very diffuse flock seen this afternoon. See single Yellow-bell, edge scrub & forest 3 ft up. Uttering "CN"s. Apparently alone. But certainly there are other birds around in trees. Then see single ♂ Western Tanager, 1 ♀, and 2 Sooty Thrushes, all close together, in tree 30 ft away. 15-30 ft up.

I certainly saw Brun in same tree earlier this afternoon. I. E. Brun and Cy territories are at least partly overlapping here. And the 2 species apparently are not separated by rigid stratification. Brunns seem to be comparatively arboreal here

5:32. Hear Cy song phrase in distance. Long formless Tanager with little or nothing in way of Intro Notes.

Above back at the Finca 5:45 p.m.

COMMENT: Mixed flocks would appear to be as common here as in other parts of the Western Cordillera. Perhaps they are, on the average, somewhat less coherent here than in other parts. But this is a point which must be checked by further observation. In any case, if true, the greater diffuseness here could easily be explained by a

comparative rarity of nuclear species.

July 23, 1953
Valley of Rio Urubamba

This morning, I will go along same path that we followed yesterday afternoon

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

6:17 a.m. 9495 ft. See group of at least 4 Pseudoeuphonia.
Edge forest. Flitting about in trees and scrub. 6-35 ft up. Very
noisy. Lots of "chattering" greetings. But apparently alone then
along Pseudoeuphonia. Apparently "coincidental"

The wind is terrifically strong now!

On way up hill, hear quite a lot more Yellow-faces singing.
But little or nothing else. Then see pair Yellow-faces alone. 15 ft up in
trees. Uttering occasional song phrases.

Some single Sooty Terns alone in pasture with dead trees.

6:53. Area where big mixed flock with both Ay and Brown was
seen yesterday afternoon is now completely devoid of birds.

Just below 10,000 ft. See single Sooty Terns alone. 30 ft up in
tree tops. Uttering Alarm Calls.

A few feet further on, catch brief glimpse Ay 1 ft up in scrub
along path. Possibly there are other birds nearby. But I can't see them.
m. Only hear confused noises.

Around 10,000 ft, I can hear quite a lot more birds without being
able to see them.

7:35 a.m. Light rain starts.

7:20 a.m. 10,250 ft. Come across family Blue & Black. Obviously same family seen yesterday. 2 adults & 1 juv. Very noisy. Lots of "fret" notes. Juvs sound & feel like parents. Today, this family is certainly alone c. 10-2 ft up in trees.

Reach highest point recorded yesterday, 7:40 a.m. This place is called La Esperanza. My altimeter now reads 10,195 - 10,200 ft.

See single Yellowbelly, 15 ft up in tree. Uttering "cn"s. Apparently alone.

Go on past forest, into open pasture with scrub. See pair Sooty Terns alone.

7:50 a.m. Hear Yellow face singing in distance.

Now single Sooty Terns in pasture ca 10,250 ft.

8:05 a.m. Reach area which obviously is alpine forest, almost "alpine scrub". 10,445 ft. Still very windy and cold. Nothing visible or audible except Andean Sparrows.

Further on, there are more single Sooty Terns alone.

Yarrow

8:15. Hear what sounds like Lafrenoyi s.l. song slightly uphill. At least one bird singing quite steadily. Notes have "sweety" quality which is characteristic of Laf songs in some other area. No other Agelaius or Whistler is audible at the time.

On way down hill. 11:15 a.m. Just below 10,000 ft. See single Sooty Terns. Silent and alone.

Letta

11:55 a.m. A little further on. Still just below 10,000 ft. Area where Big Butterflies and last large flock seen yesterday. See another flock. Includes at least 4 Big Butterflies, one pair of Pitts, one Ammodramus, 2 or more Pseudospingus, 1 Yellow face, many tree-reepers, one White-bearded Flycatcher. Group as a whole quiet. On

by the Pseudosungus utter some loud chatter from time to time. All birds in trees, ranging 20-40 ft up. Group as a whole very diffuse. And has a tendency to go around in circles. But it does have some leadership and order of procedure. Crematophaga leads once, briefly. The Big Butoraptes lead repeatedly!!! Pseudosungus and Tree-creeper follow the leaders quite closely. The Lutes and the Yellow face tend to lag to the rear. And the Whitebreast is at the very end of the procession.

Incidentally, it may be significant that the weather has been improving for the last half hour or so. Sun coming out, and it is getting warmer. Light rain stopped long ago. And this particular area is protected from wind.

Arrive back at Finca 12:45 pm.

COMMENTS:

I. My observations this morning would suggest that bad weather (at least cold and wind) discourages the formation of mixed flocks here. A resemblance to the Eastern Cordillera. A difference from Munchique.

Young
Browns

II. Although some of the birds here (e.g. the Glens and the higher altitude Browns) may be at the height of courtship or breeding display phase, it seems likely that most of them are long past courtship. Note the number of juveniles seen so far.

Going to work at level of Finca and Lulo - this afternoon

2:23 pm. Inside "sub-tropical" forest. 8875 ft. See single Ruddy Flycatcher alone. Perched on dead branches 12 ft up. Also making flycatching flights.

A few minutes later, a very diffuse mixed flock appears in view. Above tree-tops. All birds very high, 20-40 ft. Group includes at least

one Crimsoncap and one Yellow-faced Whitestart. Plus others which I can't identify. Crimsoncap f —————> Yellowface Yellowface f —————> Crimsoncap Yellowface f —————> Crimsoncap
Bonds uttering lots of "CN"s. But group as a whole doesn't seem to be making any progress in any direction. Paddy appears to have disappeared (it probably left before flock arrived).

There also are at least 2 Acorns in this group of trees. But, as usual, they seem to be ignoring other birds, and vice versa.

Group still around 2:45. Now we that it includes at least 1 Blue Black. Feeding on small fruits. Also apparently taking insects off leaves.

Now more birds joining flock. Unidentifiable. But flock still remarkably diffuse.

Going back up hill (to where Diglossas seen earlier this afternoon) 2:55 pm.

4:25 pm. See single sooty Thrush perched alone, 2 ft up in scrub, edge forest.

A few yards further on, see 3 H. atropileus 4 ft up in scrub under trees. Uttering "CN"s and R's. But apparently alone. Scrub under trees here is "miscellaneous". Not bamboo.

H. atropileus disappear almost immediately. But then I see single Yellowface and 1 tree creeper (not close together) in general area where atro-pileus were earlier. Is this yet another very diffuse flock?

Sooty Thrush does not follow the other birds.

A few moments later the atro-pileus come back. Retracing exactly their previous route. Yellowface and tree creeper seem to have disappeared.

When a few seconds later, and only a few yards closer, they get very loud noise of per. Large mixed flock high in tree-tops. Includes Yellow-belly (1), one or more Cnemidophorus, one or more Yellow-face(s), a Pipra, tree-creepers, many others. Group quite coherent, but I can't tell who is leading. I think that the Sooty Thrasher, atropileus, and Yellow-face seen immediately before may have been an "outlier" of this group. And the group as a whole may be a sub-division of the large flock seen slightly higher up ca 3:45 pm (described in my notes on mixed diglossini).

See some more Sooty Thrashers along edge forest

5:02 pm. Right at edge forest and scrub. See pair BTB's (!) 6 ft up in small tree. Definitely alone. Fly off immediately. Leaving myself 5:07 pm.

July 24, 1965
Valley Rio Hondo

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Going along another path to the Panamo this afternoon

Reach edge pasture-scrub-forest, 9400 ft, 1:18 pm. Cloudy.

Windy. Warm. Nothing stirring

2:00 pm. 9,550 ft Region of sparse forest. Rather widely spaced mature-looking trees, with lots of shagbly undergrowth. Come across very loose group. Includes at least 3 Yellowfaces (all apparently adult), 2 Cnemidophorus, 1 Yellowbelly, 1 Pipra (no. LXXXXIV - presumably arcuata), some tree creepers. All in tree tops, 20-40 ft up. All quiet. Birds very far apart. And group as a whole moving in irreg

ular circles. For a while, the Yellow-faces were leading. But then the other birds stopped following, and turned in another direction so the Yellow-faces also turned, and followed the others.

At one point there was a single hummingbird ~~still~~ feeding on pink flowers 8 ft up underneath flock. But it apparently left almost immediately, apparently without paying any attention to the other birds.

Everything quiet now 2:20. Flock has moved off.

NOTE. This whole patch seems much drier than the other one.
Patch beginning alpine or semi-alpine scrub, 10,200 ft, 3:10 pm.
Rain starts 3:30 pm 10,300 ft.

Up till now, we haven't even heard a single bird.
But now I can hear a variety in the neighborhood.

A group Blue & Blackbirds 3:37. Probably 2 or 3 individuals. 20 ft up in scrubby trees. Very noisy, but apparently alone.

Rain stopped, at least temporarily. Starting down hill 3:40 pm 10,050 ft. 3:55 pm. Come across another mixed flock. Includes at least 2 Big Butteraups, 2 Whiteheads, 2 Sooty Thrushes, 1 or 2 Yellow-faces, 2 Ocellulars, 2 PL Atlapetes. Edge forest. Group quiet. Very diffuse. PL's range 2-20 ft up. All others 7-25 (or 30). Big Butteraups apparently leaders. When they fly up hill, all the others drift after. Sooty Thrushes certainly fly \rightarrow group at least twice.

Big Butteraups must be similar to Towhees in their social role. Tend to make relatively long flights. This often takes them away from groups. When it doesn't, however, (i.e. when it doesn't take them "completely out of range" of their companions), it provides a power

(86)

ful attractive force — "pulling" all the other birds in the wake of the Buttercup.

There also were some hummingbirds around this flock. (But I don't know if they were "integral" members of the group or not.)

Arrive back at Finca 4:40 p.m.

NOTE: I wonder why I haven't seen any GT's here. Is it too high for them above ca 7200 ft??

July 23, 1965
Valley Rio Negro

Going to work at level of Finca this morning. Arrive 5:40 a.m. Clear, Cool. Occasional quite strong wind. Both Andean Sparrows and Thrushes in full song when I arrive.

6:10. See a couple of sooty thrushes alone, in forest edge.

Go on down hill.

6:35. Only a few yards further down. See pair of B/B's in top tall tree, 30 ft up. Silent and definitely alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

8:05 a.m. 8900 ft. Inside forest. See large mixed flock. Includes at least 2 B/B's, 3 (probably more) Cnemoscopus, 1 GT (!), 1 Yellowbelly, 1 Sooty Thrush, others. Group as a whole quiet. B/B's, Cnemoscopus, and GT forming very coherent group. All in tree tops, 20-40 ft up, all staying close together. Yellowbelly somewhat apart. When first seen, 30 ft up in tree, about 20 ft from a B/B. But then flies down into scrub. Lands 10 ft up. And I am not sure that it continues to associate with the others. Sooty Thrush possibly even more "detached".

Suddenly appears in trees. Utters lots of Alarm Calls. Then disappears again. Possibly it appeared simply because I was nearby.

Aug 8 3500

NOTE: The local people call the parrot here "El Morro".

COMMENT: All my later observations have confirmed my first impression that the social behavior of most tanagers, finches, and woodpeckers here is very similar to the corresponding behavior of the same species in the southern part of the Western Cordillera.

In writing up the results of this whole project, when completed, it will not be necessary to distinguish two distinct "regions", i.e. "the southern part of the Western Cordillera" and "the northern part of the Western Cordillera" in the discussion of gregariousness and mixed flocks (although it probably will be necessary to distinguish between these regions in the discussion of Diglossini — see today's notes on mixed Diglossini.)

The fact that the "non-diglossine" species here behave in much the same ways as on Munchique and in the Farallones is good supporting evidence that my hypotheses that gregariousness is causally related to frontier conditions and accessibility to "island hopping" are correct.

SEE BACK

SUM TOTAL ALL OBSERVATIONS = 28 hrs at 2000

All sport in areas where flocks would be expected to occur.

Florida July 22, 23, 24, 25 (1965)

Inds Alone

|||||
 |||||
 ||||| (179)

Inds in Flocks

Largest no. Inds in Flocks

(24)

Total No. Flocks

||||| (24)

No Highly Organized Flocks

||||| (9)

Largest no. Species in Flock

(14)

Species in Flocks

6 -
 5 5
 2 6
 2 3
 2 12
 14 2
 - 7

35

10

3 TOTAL = 99
 2 (for 17 flocks)
 5

20

2
 8

SEE OVER

3 (17)

Total no. flocks seen = 24

Inds. in flocks = 218

Average no. inds. per flock = 9.08

Species in flocks = 99 (banded on 17 flocks)

Average no. species per flock = 5.21

August 4, 1953
 Frenchburg

Arrive top mountain 8:45 am Just getting light fog
 Little wind now

Very few birds on the way up. Now 8:49, there are
 a few tree shrews and the birds by the police post. Then a variety of
 bird sounds. Nothing very recognizable. Then quiet again. Then
 some browniebird and some ~~fluffy~~ sounds

It looks (as usual) as if all or most species are not breeding
 any here now

The altitude here, according to my altimeter now, is 2880
 m, 9467 ft.

Just starting to lift 8:53 am. Only a few bird noises and
 little. Nothing much moving around either

Then see single White-beard close. Perched 6 ft up against scrub
 edge road. Uttering long phrase after long phrase, in rapid succession.
 Perhaps this individual is in breeding condition.

A few yards further on, see single Yellow-bell moving thru
 scrub 2-6 ft up. Moving at intervals. Pauses close by White-beard.
 Latter does not stop singing. Yellow-bell moves on. White-beard does
 not follow.

There is a variety of hummingbirds here. But I don't recog-
 nize any of the species

At least one of the hummingbirds here is "Rufous-capped"
 (no XIV)

Hummingbirds are fighting among themselves.

6:22 am A few yards down road. 10 pairs of *GT's* in alpine scrub. 1-10 ft up. Very noisy. Lots of *S.H.B.'s* and *Spotted Thrushes* and *Robins*. Apparently alone.

6:33. Fog completely gone now. Sun trying to come out through clouds. And all birds completely silent.

Then hear a few *Dubusia Long* in distance.

6:40. See mixed flock. *Yellow-bellies* moving thru trees edge alpine scrub and upper sub-tropical. Very noisy. *P. long* 6-25 ft up. Picking insects off leaves. Then they fly across road followed by a small bird of another species (warbler size, but not identifiable).

A few minutes later, see pair of *GT's*. Moving thru alpine scrub. 6-10 ft up. Silent. Moving in direction of *Yellow-bellies*. But (still) at least 100 yds away.

GT's move off. And a minute later, see single *Big Buttercup* is moving thru scrub - in opposite direction! Silent.

Is a big mixed flock in process of formation now? Still in the disorganized "mulling about" phase?

Yes!!! A minute later, see group (again). Now back on side of road where *Yellow-bellies* seen first. Group now includes at least 3 *Yellow-bellies*, 2 *GT's*, 2 *Big Buttercups*, 1 *Ag*, 1 woodpecker of a species not seen before (red cap, golden blue back), and *Burke's* ge tree creeper. Group as a whole has become coherent now. All birds quite close together. Ranging 1-30 ft apart. At least twice, *GT* supplants \rightarrow *Yellowbelly*. All birds ranging 15-35 ft up. *Ag* feeding on small white berries. Using same technique as the *Pico de Espejo* bird. *GT's* and *Yellow-bellies* eating same berries, also.

also 1 or 2 Blue & Orange (s)

pulling units off lower. Most birds quiet. But Cy utters lots of song phrases. Song sometimes preceded by "Tut" Intro Notes

It seems obvious that Yellowbellies formed the "original nucleus" of this flock. Moving first conspicuously and surely — at first alone. But then they gradually attracted the birds of other species.

Eventually, one of the Yellowbellies in the flock flies down hill. Into upper subtropical forest. All other birds follow, except (the other) two Yellowbellies. The latter remain behind. Then fly off in opposite direction.

Then complications set in! Just as I am finishing the above account, 14:15 a.m., pair of PL's appears. Moving down hill along road. Moving. Obviously same pair seen earlier this morning.

Move into the exact same trees where big flock seen earlier. Then single Whitetrup appears. Whitetrup f —————> PL. PL's range 2-30 ft up. Whitetrup 2-15 ft up. Whitetrup quiet or silent. At this point, I thought "aha! Two different mixed flocks with overlapping 'flock ranges'."

Then PL's fly across road. Whitetrup f —————> PL. Immediately, large flock appears in trees just vacated by PL's and Whitetrup. Obviously largely the same as the large flock seen earlier. (I.E. the birds must have started up hill again — thus re-occupied trees occupied earlier.) Yellowbelly (us) apparently still in lead. Then this large group flies across road, obviously following PL-Whitetrup group!

Thus, this would appear to have been an example of two "sub-flocks" merging. And, at the same time, the leaderships of

most of the birds was transferred from Yellowbelly (see) to P2's!

- Then go up road, in direction flock went. 7:44. Come across
 16 2 Yellowbellies. 12-20 ft up in alpine scrub. Uttering "PN".
 Presumably some of the birds that were with flock earlier. But
 now sitting alone. (Either that or they have lagged very far be-
 hind as a "rear guard".)

Shore Dubonia song 8:28 am. Only slightly down hill from
 Police Station.

And from other birds generally very quiet now. Fog is coming
 in again.

Actually, the whole area seems to be quite deserted now. Presum-
 ably most of the local birds have gone off with one or more flocks.

Go down into upper part "upper sub-tropical" forest.

- 9:03. (9400 ft according to my altimeter now, which is vary-
 ing a little with T° and pressure.) See single Blue & Black. Definitely alone
 17 in high in trees, at least 40-ft up. Uttering "PN"s. Flies on at once.

- 9:15. Slightly down road. Same place where largest mixed flo-
 ck seen on my first visit. See enormous mixed flock. Obviously part
 18 ly the same as the flock seen earlier this morning. This time, I saw on-
 ly part of group. But I did notice the following.

- 16 Group includes at least 1 GT, 1 Blue & Orange, 1 Yellowbelly
 20 y, 2 Dubonias (1 juv - with yellow at gape), 1 Big Butorpus, 3 or
 21 more Cunoscopus, 2 Whitestrikes, 2 H. atro-pileus, 3 or more of what
 22 appear to be B. luteoviridis (sic!), 1 P2 Attagetis, 2 or more Yellow
 23 faced Whitestarts, 1 Cy, 1 ♂ and 1 ♀ WCC, 2 litters, various tree-
 24 creepers, and a group of at least 5 small, dull-brown, rabbit squirrel
 25 or arm-like furmars. WNN

Group as a whole very coherent. Moving rapidly along on both sides of road.

It is very possible to recognize two slightly different associations within the flock. A "scrub sub-group" and a "tree sub-group". Each seems in each sub-group tend to stick pretty much to the "proper" level of their sub-group. But the two groups are not very well segregated "micro-geographically", insofar as any individual of one sub-group may be nearer to an individual of the other sub-group than to the nearest other individual of its own sub-group.

"Scrub sub-group" includes all the Hemipungus and Barleu towns spp., the Yellowfaces, the Fettis and WCC's, the Cy, and the Synallaxis-like fernanensis. Also the Blue & Orange.

Most individuals of this sub-group range 1-15 ft up in very diverse scrub on our side of road. Fettis and WCC's probably averaging higher than the others. Both Yellowfaces and Cy come down to the ground at least once.

The "tree sub-group" includes GT, Yellowbills, Big Buttercups, Crematophyes, and tree creepers. All or most individuals in this sub-group ranging 10-35 ft up.

The PR and the Dubonia range from high to low, throughout the usual ranges both sub-groups.

Group does not have "regular" or "persistent" leaderships. Advancing on a very, very broad front!!!! sort of "beating" the whole area. Almost every species slightly in advance of the others, at one time or another.

Within the "scrub sub-group" however the Whitetrupes and/or H. atropurpureus probably are in the lead slightly more frequently than all

or most of the other species.

There is some tendency for the brightly colored and more or less strongly arboreal tanagers, i.e. the GT, the Big Bullfinches, the Yellow-belly (as), and the Dulbeas to stick fairly close together. The Blue & Orange probably does not associate particularly closely with the other bright tanagers. The other arboreal species, i.e. Chrysomitris and the tree creepers, certainly do not associate particularly closely with the bright tanagers. But they probably do tend to associate fairly closely with one another.

Settis
WCC

The Settis and WCC's also tend to associate with one another particularly closely. Usually the WCC's move along behind the Settis (The WCC's probably really are following the Settis. A real interspecific preference. But I can't be sure about this, simply because there usually are other birds in front of the Settis.)

Cy
Fish
WCC

The Cy does not show any obvious tendency to associate particularly closely with either Settis and/or WCC.

The Chrysomitris fight among themselves very frequently. Group as a whole noisy. Lots of 'CN's and other short notes. No Whitestripes, Cy, Yellow-belly (as), and Dulbeas also sing from time to time.

NOBWA when Cy is singing.

Group eventually disappears down hill.

the
no

I go back up road. 10:21 a.m. Border alpine scrub and "upper sub-tropical" forest. See small group which might, conceivably, be a detached part of the large mixed flock seen earlier. Includes

GT
Cy
Cy

1 GT, 1 Cy, probably others. In trees, 15-30 ft up. Cy f —————> GT.
Cy feeds on white berries (same species seen eaten by Cy earlier this

this morning. (Perhaps these berries are in same tree.)

For many miles again I go (the great wave of fog re-
unusually low and me - in the park (15) - this morning.)

Leaving 10:40 a.m.

ADDITIONS

I. All the birds seen feeding in the large flock seen this
morning appeared to be taking insects, in one way or another. This may
help to explain why they were advancing on such a broad front,
"beating" the vegetation in front of them.

II. I saw at least 3 Sooty Thrushes alone this morning, with-
out bothering to mention them in my notes.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Going up to the Ranchito this afternoon

2:11 p.m. 8000 ft. Hear some Kite-throat songs in wood in
ravine below me. NODWA. Only a few phrases. Then hear quite a lot
more Kite-throat songs as I continue along path. At least 2 individ-
uals singing. Still NODWA.

2:40 p.m. Edge same woods. 8050 ft. Catch glimpse of what is pr-
obably mixed flock. Certainly includes at least 1 or 2 Campocoma flav-
nucha, 1 bird (flycatcher?) of gyropterus species. From sounds, I would
suppose that there were a lot more birds in neighborhood.

C. flavinucha ranging 5-30 ft up in trees and bushes

Yes! There are more birds around. A whole procession sudden-
ly appears. All birds strung out, quite far apart (usually 20-30 ft).
But all moving rapidly and steadily in the direction that C. flavinucha
(et al) took a few minutes ago. Birds appear in this order. First, one
cyanocephala, second, one fly, third, two Kite-throats (definitely integr-

(12) all members of the oppressed flock, fourth, one rufinucha and fifth and last, one Yellowbelly. cyanocephala steep high, 20-30 ft above ground. Slate-throats probably similar. Cyanus only low, 5-10 ft. rufinucha and Yellowbelly ranging 4-30 ft up. Slate throats sing while with flock. NOBWA. All other birds quiet.

3:00 pm. A little further along path, see two squirrels. Song either, but not associated with birds. In trees in pasture. Fair, small. Dull brownish above. Prefers below same reference on last. (Note: I also saw one squirrel, possibly same species, along this morning.

Then see single Sooty Thrush alone. Also in trees in pasture.

3:10 pm. Another patch of woods 8170 ft. Hear what seems to be like another mixed flock. Lots of "CN". All I can see is one Sooty Thrush (15-20 ft up), 1 Yellowbelly (4 ft up), and 2 Xanthocephala (ranging 6-20 ft up). I can't tell if they really are reacting to one another or not.

14 All Yes! The 2 xanthocephalas fly off into distant trees. Go from tree to tree, 20-30 ft up. Apparently, neither Yellowbelly nor thrush follow. But at least cyanocephala appears. cyanocephala f —————> xanthocephala at least twice. Moving thru same levels of trees.

13 Then see single E. flavinucha 20 ft up in tree. Right where xanthocephala used to be! Apparently no other birds close by, now, but this flavinucha might well be an outlier of the flock.

3:30 pm. Come to patch of mature looking forest. Just below Panchito itself. 8200 ft. See single squirrel (usual species) in same trees as Acorns and hummingbirds. Can't tell if birds and mammals are

reacting to one another or not

Go on way past Ranchito Along trail thru forest. Reach 8500 ft 4:20 pm Bottom of fog level Can hear lots of birds in tree-tops on way thru forest, but can't see them

Starting Lower Hill 4:15 pm


- 16 4:25 pm 2450 ft. See Big Buttercup, silent and alone, 40 ft up tall tree edge clearing. Flies away immediately. Back in direction from which it came. Then I hear quite a lot of miscellaneous bird sounds that area. Then wife & Western Tanager flies into same tree Buttercup nested earlier. Also 40 ft up. Now, flies on opposite the direction taken by Buttercup. Then I hear quite a lot more bird sounds same general area. Cat's brief glimpses dark forms moving in tree tops. They get ~~glimpses~~ better view. This is really quite a large flock. At least 15 individuals. Besides Western and Big Buttercup, group includes at least 2 Cnemidophorus, 1 GT, 1 yellowish flycatcher, 1 Yellow-faced Whitestart. All quite noisy; lots of "CN"s. Yellow face ranges 12-20 ft above ground. The rest of the birds range 20-40 ft up. Yellow face and GT bringing up the rear guard. From the general direction in which group is going, I would deduce that Big Buttercup is in lead.
- 20

Fog is coming down to this level now 4:43 pm

Flock disappears (down hill?) quite rapidly. Quite coherent!!

Going on down myself.

- 33 5:01 pm Below Ranchito. Patch of forest where xanthocephalus also seen earlier. See mixed flock. Includes 3 Blue & Blacks, 2 Yellow-bellies, one nondescript grayish flycatcher. Edge forest and scrub. Blue & BL

51 Liked to the Rose-throated Loops.  26.11

Stopping observation 6.00 p.m.

COMMENT: It would appear that the birds here are just about as quarrelsome, and in much the same ways, now as they were a couple of months ago! This is quite remarkable - in view of the fact that the weather is very different now, and that most birds must be in a different stage of their annual cycle.

It is also interesting that mixed flocks were common and highly organized today - in view of the fact that the weather today was good, on the whole.

August 8, 1965
Munchique

Arrive top of mountain 5:45 a.m. Weather much like yesterday. Fog. But it is colder and windier than yesterday.

Only a very few miscellaneous bird sounds when we arrive 5:54 a.m. Hummingbirds fighting among themselves.

A moment later, White-bellied starts singing usual place.

Then hear a greater variety of sounds slightly downhill.

Everything quiet again 6:04 a.m.

8 Single bird flies by, alone, in fog. Uttering "Peet" notes. Can't be identified by sight; but sounds like Yellowbelly.

Seen trying to come out 6:15 a.m.

There is a slight, but very slight, recrudescence of bird noises when the sun finally appears clearly 6:21.

9 6:36 See single Yellowbelly 3 ft up in alpine scrub. Utters a

few notes but fairly quiet on the whole. Definitely alone

0:30 Hear Duluna singing down hill

0:50. See single Parula Thrush alone. It is up in

by just below power station

It is windy and cold but today in spite of the sun. Is the sun having a discouraging effect on the birds?

Light fog back 1:00 p.m.

1:05. Go down to upper border upper sub-tropical forest. See pair of Yellow-bellies. Definitely alone. 40 ft up in a stone tree. Then 20 ft up in tree with white berries where flock seen yesterday. Definitely eating the berries. I.E. They are competitors of Cy.

Hear Duluna song down hill 1:15

1:40 a.m. 9200-9100 ft. 2780 m. Region of rather scattered tall mature trees with lots of scrub underneath them. A large mixed flock. Essentially a "scrub" flock. Possibly some of the same individuals seen in flock(s) yesterday. But group as a whole very distinctive indeed!

When first seen, group includes 2 Atlapetes rufinucha, at least 2 (probably more) Pl. atlapietes, 1 A. torquatus (nic!), 1 Yellow-face, 1 or 2 Whitestrupes, 1 or 2 H. atripileus, 1 Cy, and 2-4 of the dull brown Synallaxis (same species seen yesterday).

A. rufinucha consistently in lead at this time!! Very loosely associated with both Pl's and Whitestrupes. Pl's f —————> Rufinucha repeatedly (at least 10 times). Whitestrupes f —————> rufinucha repeatedly (at least 10 times). Relative positions of Pl's and Whitestrupes rather variable. Sometimes one species in lead, sometimes the other. Whitestrupes f —————> group of rufinucha and Pl repeatedly (also at least 10 times). Pl's f —————> group of rufinucha and W

(125)

Antreptes repeated (also at least 10 times).

A torquatus was seen associated with rufinucha, PL, White stripe group for at least 10-15 times. torquatus f ———→ group repeated (at least 8 times). Then torquatus supplants ———→ PL's at least twice. Chrysomitris b. etc. Then torquatus seems to disappear. Parus stops associating with group.

This rufinucha - PL - White stripe - torquatus group were coherent. Birds only a few inches - 2' apart most of the time. All birds hanging from ground - 5 ft up.

The atropileus and Yellow face certainly were associating with the other birds. Both species f ———→ group repeatedly. But they did tend to maintain greater distances between themselves and the Atropileus - White stripe "nucleus". Usually 1-4 ft. They did not, however, tend to associate particularly closely with one another. Both usually ranged 1-4 ft up.

(1) The ly apparently was with group only a few minutes. In some b, toward rear. 3 ft up. Then flew up into tree, 20 ft up, and apparently left group.

The dull-brown Synallaxis consistently brought up the rear. Ranging 6" - 2' up in scrub.

Then the group crossed the road and went to area where scrub under trees was a little more "lush" and taller. About this time, the leadership began to change hands repeatedly - back and forth rufinucha, White stripes, atropileus, and Yellow face all in lead at various times. Each species in lead repeatedly. All ranging from ground (in the case of the Atropileus spp.) or 1' up (in the case of the tanagers and warblers) to 10 ft up in scrub. Still being followed by dull-brown Synallaxis.

- 170 And somewhere along the way they pull up at least 1 tree-creeper and
 173 2 (or 4!) Atlapetes brunneinucha. The brunneinucha group repeatedly (at least 10 times) !!!

Synallaxis, brunneinucha and tree-creeper stay relatively low. Ground to 3 ft up in the case of the first two species. 1 to 2 ft up in case of the third.

Group still very coherent at this time

- 174 Group also attracts 1 White-throated Hummingbird. Joins and leaves the group repeatedly. Flitting about all over the place. But definitely keeps pace with the group as a whole. Containing an integral member of the group.

- 175 Group also attracts 1 Big Buttercup. Flying around high in trees above the other birds. 30-40 ft up. Also keeping pace with group.

Atlapetes spp., Therapsurus spp., Yellow-face all noisy. But neither Atlapetes nor Yellow-face sing. But one or both Therapsurus spp. utter(s) lots of Rattle-Flourishes. Other birds constantly quiet or silent.

White-throat feeds on flowers (including tubular purple ones sometimes favored by Albis). Big Buttercup apparently doesn't eat at all while with group. All other species apparently looking for insects all or most of the time. Probing in crevices, twigs, leaves, etc.

NOTES: This could be described as a "mixed Atlapetes flock". Rather like the one seen near Belmira a couple of weeks ago !!! And certainly the rufinucha's could be described as "passive nuclear".

Are the brunneinucha's really allogregarious here ??? If so, it would be a below (or the exception) to my general rule that birds in divergent tend to be more gregarious than individuals of the same species.

in the Area!!!

Jan 24 - Jan 25 1980

Going back up road. Everything was quiet 9:10 a.m.

11/18
11/19
WCC
11/20

9:20. Edge upper canopy at forest. See another run of pine trees and went along road. In road at least a Cuculorhynchus, 1 Blue & Orange, 2 Pitts, 1 WCC, 1 Chamaea, 1 Woodpecker (seen yesterday, golden back - same species as yesterday), 2 White bearded Flycatchers. Can't see who is leading. Probably Pitts part of the time. Pitts and WCC's ranging 6-20 ft up. Picking insects off leaves. Blue & Orange ranging same elevation, but I can't see what they are feeding on. Cuculorhynchus stay high in trees 30-40 ft up. Picking insects off leaves. Flycatchers and woodpecker probably ranging 20-30 ft up. Group as a whole coherent. Only moderate noise.

There was at least one fight among the Cuculorhynchus.

WCC

The Pitts and WCC's tended to associate with one another particularly closely. I think that I can say that this is "usual" now. And the WCC's certainly followed the Pitts repeatedly.

NOTE: It seems very likely that some of the birds in this flock, like some of the ones in the "Atlapetes flock" seen earlier this morning, were members of the very large mixed flock seen yesterday. I.E. the "composition" of the flocks here is fluid. And individual birds may have some "choice" as to which flock(s) to join every morning.

10:01. Some but further up road. See single sooty Hummer a low flying across road.

Leaving 10:30 a.m. Everything dead!

NOTE: I don't think that the above comment on Atlapetes brunnei-nucha is very bright. For several reasons! In the

first place, I certainly have seen brunneicapilla several times apart from mixed flocks here. In the second place, if it is really brunneicapilla over here, it is the most sure of the birds that I have observed. I have seen the White-throated Woodpecker!! Possibly there is a general rule that brunneicapilla are more all along the Andes than in the case of the same species in Europe - either the latter are more all along the Andes or other native birds of the same species in other parts of the Andes. (Possibly the BCBT is an exception to this general rule. But its case is complicated by changes in autogynism.)

Going to work along the highway this afternoon. Cloudy. Fairly warm. Occasional sprinkle of rain. Fog (coming in from usual place) has reached very far this afternoon (almost to store).

2:45 pm. See single White-throated Hummingbird feeding 3 ft up in "hedge" along stream. Definitely alone.

NOTE: There is almost no wind down here this afternoon.

3:00 pm. Near where "Gloria" seen last year. Could see glimpse of what may be small, diffuse, flocks in fog in trees tops. All birds quite unidentifiable.

3:15. See a couple of sooty Hummers alone in scrub G road.

3:20. A few yards further along road 8:20 fog came across

3:20. Quite mixed flock in heavy fog. Includes at least 1 Whitethrope, 1 Cnemidophorus, 3 or 4 large yellow-breasted tanagers (presumably Bu theraupis and/or Couprocora spp.) Whitethrope in scrub 6-12 ft up. Other birds in small second growth trees 15-30 ft up. Flock apparently fairly coherent, but not going anywhere. All or most birds utter a lot of "CN"s, but nothing else.

Fog really too thick. Going down road 3:40 pm.

At about 2:00 pm. Cremosporus - White-throated flock starts to move. And then for 1/2 hr. somewhat. So I see quite a lot more of the flock. Group includes at least 1 Cremosporus, 1 Yellow-faced, and some formicivorus.

C. formicivorus in small trees, 12-20 ft up. Cremosporus orange in both trees and scrub, 2-20 ft up. H. atricapillus low in scrub, 2-5 ft up. Yellow-faces in trees, 10-20 ft up. Tree creepers and formicivorus low, ca. 4-8 ft.

Group also includes 1 Atlapetes rufinucha! Low. On ground and in low scrub - 2' - 2' up.

Behavior of A. rather interesting. In low scrub (large blackberry) 1-3 ft up. Picking insects off leaves. I.P. is quite typical of Atlapetes. I have never seen an Atlapetes at this particular locality, but there certainly was a "glow" only a few hundred yards down road a couple of months ago. Swainson's is the lowest altitude at which I have seen Ays around here?

All birds still uttering lots of "CN"s. A. rufinucha also utters one burst of "grating" chatter or twittering chatter. Possibly there are two individuals of the species here.

Group still coherent, and still not making much progress! Finally, group disappears 4:10 pm. Goes into forest, I think.

A little further down road, fog has completely disappeared!

4:22 pm. A little bit further down road. Come across another mixed flock. Includes at least 20 birds. Many of which I can't identify, but group does include at least 1 Cremosporus, 2 Chlorospingus.

174 ques of a species I have not seen (or off East side of canyon).
 (plain gray breast and belly). 1 ♂, 2 ♀ Yellowfaces seen. 20-25 ft.
 Birds uttering only CN. 1 ♂ in thick second growth
 ft up. Group very coherent. Then rapidly up hill. Canyon
 ♀ probably in lead at last part of time. HHHHHHHH

ADDITIONS: Group also included one species with red cap
 and golden back.

Return to town 5:50 pm. Day coming in again.

NOTE. The Chlorospiza with light flanks seen this afternoon
 was semifuscus.

August 7, 1955
 Maudslayi

Going to work where I thought I may have seen a carbon
area s.l. or a lafresnayeri s.l. a couple of months ago. Arrive 5:40
 a.m. Just getting light. Cloud coming up. Windy. Cool.

A fair amount of miscellaneous bird noise 5:45. Certainly
 more than on the top of the mountain!

Atlatetes Whistle song down hill 5:49. One phrase.
 NODWA. Then some more NODWA. Sounds like refranchi

Birds already getting quiet 5:55 a.m. It really is very w
 ildy here now!

According to my altimeters, now, the altitude here is 8650
 ft, 2650 m.

5:58 a.m. One Yellowface song in distance. NODWA. Then
 some more Atlatetes Whistle songs. NODWA

There were also quite a lot of *Mitrapetes Whistlers* in the experimental. At least 4 or 5 were also singing. Is this species breeding now?

6:05. More *Mitrapetes Whistlers* singing in distance. Completely or I stopped by *Mitrapetes Whistlers* for a moment.

15 a number of *Sooty Terns* flying around. Alone singing and quiet. 7:00 a.m.

6:22. See single *Yellow-faced* silent and alone. 3 ft up in sparse scrub on rock slide.

6:28. Some *Sooty Terns* further along road. See pair of *rufinucha* in second growth scrub on slide. 3 ft up. "Whistling" "Greeting" "Twitter" and "Tills". Apparently alone.

6:35. More *Yellow-faced* songs in distance. NODWA. Young back along road, see single *maroon-crested* *mountain* *cotinga* silent and alone. 6-8 ft up in sparse scrub on slide. 7:01

Then see another single *Sooty Tern* alone.

A little further up road, catch glimpse of what is almost certainly a *Yellowbelly*! (Black wings, bright blue rump.) In second growth on old slide. 3 ft up. Silent. Apparently alone. Disappears immediately.

7:28 a.m. 8450 ft. Region where slide vegetation starts to merge with "upper subtropical" forest. See single *rufinucha* 3 ft up in second growth scrub. Uttering lots and lots of "Seence" Notes. There also is a *Coutinues*-type flycatcher in same scrub. But I can't tell if the two birds are reacting to one another or not.

This region is rather protected from wind.

Sun coming out. 8:10 a.m.

8:20 8850 ft. See single *Yellowbelly*, definitely alone, in tops

small trees edge road 20 ft up Very quiet. Only occasional birds.
Apparently taking insects off leaves.

89 8:29 Just a 100 yds down road. Hear lots of Hemiprocne
or Bauhinia type R sound. One in tree a sub-undertone in
90 these trees. Unfamiliar at first. Then a single Yellow-bellied flycatcher
into nearly tree 30 ft up. I don't know what attracted by sounds
in scrub. I.E. definitely joining Yellow-bellied. After a few minutes
91 it disappears. Then a single Albino suddenly flies out of the road
from which the sounds are coming. It hits a large tree, bounces and then
ends disappears also. But sounds continue to come from I.E. it was
not the Albino which was making the noise. Albino probably came only
to try to "excite" the Bauhinia or Hemiprocne.

Things in general are really unbelievably quiet today!

9:10 a.m. Back to 8850. Second growth on old slide. See definite
mixed flock. Another "mixed Atlapetes" flock. Includes at least 1
92 Myiophobus, YPL (sic!), Megascops, Yellow-face. Also others.
All ranging 2-6 ft up. Myiophobus probably in lead. Yellow-face cer-
tainly in rear. One of the Atlapetes, probably Myiophobus, uttering lots
of "Seeeee" Notes. Other birds quiet.

This is almost exactly the same spot where single Myiophobus was
observed uttering lots of "Seeeee" Notes earlier this morning.
Probably same individual in flock now. If so, Myiophobus probably for-
med the "original nucleus" of the flock.

Group as a whole very coherent. Pares rapidly uphill.

9:40. Back up just below 8850 ft. Where Alb and Yellow-
93 bellies were earlier. Definitely a mixed flock here now. Includes 1 Myiophobus
103 ch, 2 Yellow-bellies, others. Myiophobus ranges from ground to 6 ft

up. Yellow birds in trees, 12-25 ft up. rufous-bellied utter lots of fee
 secure note. Yellow-bellied also apparently noisy. Can't see who is
 leading.

Leaving 7:30 a.m.

NOTE: I think that the poor development (i.e. small size) of mixed flocks this morning, must have been an effect of the wind. Many birds apparently stayed hidden, i.e. well under vegetation, and thus were not in a position to see, or be seen by, other species. (One word of explanation may be added in this connection. Although the last place (as I understood was) protected from the wind, the wind continued to blow with full force on other parts of the mountain throughout the whole morning.)

Going to work on Ficus this afternoon. Go up steep hill (first place I went during my first visit a couple of months ago) along side small woods. Weather half cloudy, half sunny. Lots of wind (still).

2:30 p.m. See single Agelaius-type. This probably is real Agelaius (striated white throat, rusty below). In trees, 15-20 ft up, edge small patch scrub in pasture. Definitely alone.

This is not far from where fog usually reaches in afternoon.

Go up to highest point of this hill. 8550 ft. Just at the edge of fog this afternoon. Everything very quiet.

4:10 p.m. See single Yellow-belly. Quiet apparently alone. 4 ft up in scrub-edge pasture. (This scrub is very low, but thick and possibly mature. May be low because of constant wind in this area.)

Starting down hill 4:15 p.m.

A few yards down, see single Sooty Thrush alone. In tree edge pasture. Silent.

4:28 pm 8470 ft. See more of back. Includes at least one Carpenter
Ornithoeca flaviviridis Y. macrocephala & large tree creepers (same species) and
T. fastig. Thru. All birds 15-20 ft up in trees edge pasture. In the
 morning "CN" Comptosoma in back part of the tree Y. macrocephala in
 back part of the tree.

Fog coming in further 4:45 pm
 Get back to house 5:10 pm

August 10, 1953
 M. L. L. L. L.

This morning going to work at a place, or a region, called
 "La Palma". A little mountain or foothill on the southern flank
 of M. L. L. L. L.

Arrive 5:15 a.m. Pitch black! Fog starts to get light
 5:45 a.m. Heavy cloud. Occasional drops of rain. Warm. Little or no
 wind.

We seem to be on western side of mountain, more or less. Diff
 icult to tell exactly because of cloud. Probably SW. Altitude is
 8350 ft, 2540 m.

A variety of miscellaneous bird sounds begin ca. 5:48.
 Several birds uttering what may be DC. Hoarse "Iscoo"
 Notes. Uttered in rapid succession for long periods of time in indeterm
 inate series.

Vegetation around here might be described as "mature
 -looking scrub". Very thick. Not very tall.

Aside from birds uttering DC, everything quiet 6:00 a.m.

Then more reports from the distance. But it certainly does
 not sound like the bird I saw in the morning.

Yellow face song, with some 22 overlapping "DC", but
 nothing else.

On the 10th of October we did some display. Flies
 up and then gls. down. Uttering unusually loud "DC" Notes at
 an accelerated rhythm. Again. 6:08 a.m.

There is something which might be "Jerk-like Tanager"
 (FLT) silent and alone 2 ft up in scrub.

"DC" finally stops 6:13 a.m.

A pair of birds flies by alone. Apparently Blue-wing Tanagers.

Then see Diglossa of some sort flitting rapidly thru scrub.

More Yellow face song in distance. NO DWA.

6:20 a.m. A little bit down path. Edge scrub and pasture.

See single Chlorophanes semifuscus At foot rather low in scrub.
 Uttering "Tut" notes. "CN"s? Then perches 10 ft up in scrub. Beg-
 ins to utter DC. Lots of slightly hoarse "Tseooo" Notes. Uttered in
 very regular rhythm for long periods of time in indeterminate series.
 Bird sitting in ordinary, unritualized posture. Every once in a while,
 rhythm of notes accelerates. Then they suddenly turn into R. Rhyth-
 m of R accelerating. R Notes also progressively descending in pitch. But
 all R Notes are relatively clear (i.e. not hoarse). Each individual R
 Note might be transcribed by something like "Chuk".

Possibly semifuscus were the birds uttering "DC" earlier this
 morning.

In any case, this particular semifuscus would appear to be
 in breeding condition now!

3 6:35 a.m. Light rain. Then see a pair of Blue-winged Teal flying
 18 ft up in trees, only 30 ft from where semi-palm is. Then
 4 DC silent. Then see pair of Yellowbellies in trees 100 ft up. Then
 see the Blue & Orange and the Yellow-bellies in a tree with a
 Parula near the top. Lots of Lavender gnatcatchers. Then a
 4 a single White-throated Hummer is heard feeding on flowers. Then a
 single Black Dilemma appears in view near White-throat. Then all but
 the Black Dilemma disappears.

I don't know if this group should be considered a mixed flock
 or not! If it was a mixed flock, it was very diffuse.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

17:06 a.m. Same area. Hear Dubusia songs not far away.

17 10 Also Paruliterus and/or Hemipungus-type P. lites and Howards.
 10 Then a group of 3 PL Atlapetes appears. In distance. Moving gradu-
 ally in direction of Dubusia and pursued Paruliterus and/or
 13 Hemipungus (all of which fall silent at about same time). There
 15 also are 2 Yellowbellies associated with this PL group. All mov-
 ing 10-20 ft up in scrub. All fairly quiet. Group as a whole very
 coherent. PL's definitely in lead. Yellowbellies f ———> PL's
 repeatedly.

Group pines out of sight. Still moving same direction.
 Then, approximately 2 minutes later, a single Squirrel appears.
 On ground. Moving steadily in same direction as PL-Yellowbelly
 group! Apparently following! Squirrel seems to be usual species.
 Generally dull medium brown. Some rufescent on under parts and
 tail. Then the squirrel sees me and retreats. Silent throughout.
 Rami stopped 17:15 a.m.

✓
6 7:55. (Some juv still containing DC and R's same general area. Apparently it did not join mixed flock when the latter passed through. (Considering the some juv continued vocalizing the constant the Dubois and Henningsen - Banister type vocalizations. Complete overlap.)

Everything very quiet 7:32 am

Then I go for quite a long walk along path. Quail reach area of tall 'upper subtropical' forest and continue through it. Don't see any birds. And hear only a few. The forest in this whole region appears to contain many fewer birds than the edge. Only to be expected, I suppose.

Back region "mature-looking" scrub - 8:10 am Hear Dubois in singing downhill.

Seen coming out 8:17

A few more Yellowface songs in distance 8:30. NODWA

14 Then in single "Barred" Pipit. Presumably ♀ or young - green head. Silent alone. 10ft up in short trees

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

This afternoon, going to work where first "Glau", Albi - scan interactions, and mixed flock including Slate-throats and Sooty Thrushes were seen a couple of months ago.

Arrive 2:30 pm. Cloudy. Warm. Occasional wind. Everything very quiet.

2:35. See single Sooty Thrush. Silent & alone. 4ft up in tree

2:42 See single Slate-throat apparently alone. In trees and bushes 5-30ft up. Uttering a lot of "CN"s. Then I see that there are 2 Slate-throats around. One adult, one juv. Juv. fed by adult at least once. Bo

the birds flitting, about quite active. Sometimes together from time to time. Apparently getting insects only by flycatching. Then 2 ♂ Allens (different identification) appears 8 ft up in dense bush. Right under tail to which slate throats happen to be at the time. Allen silent. Obviously by "mouthing". Disappears almost immediately. Then a single slate throat. Allen disappears almost immediately. 95 f ———> slate throats. Allen disappears almost immediately. Leaves seem to have left this area completely (too). Bushes which bear tubular purple flowers a couple of months ago now have red berries. A few drops of rain began 3:30 pm. Everything still very dull. Leaving.

Go on to another semi-isolated patch of forest. 7900-8000 ft. Just under where I worked yesterday. Don't see anything of interest up to 4:05. (Altho I do hear a few birds in tree-tops)

This is not an area where fog comes frequently. It certainly is my impression that, at this altitude, mixed flocks are much more common in areas which are frequently foggy than in areas which usually are clear. (This supports hypothesis that the formation of mixed flocks is essentially a "defensive" reaction.) But why are mixed flocks so highly developed on top of Murchique, which is not a very foggy area? Because vegetation is so thick (thus impeding visibility)? More important, why are mixed flocks very rare or absent in Quilo region, parts of which are very foggy, at least at times? Because dense vegetation has a restricted distribution in that region (now)?

4:29 pm. Just a few yards further up hill. Region where the patch of forest is particularly thin and scrubby. See definite mixed flock. Rather small. Includes at least 1 Blue & Black flycatchers (different species) — 1 large, possibly Myiarchus, and 1 small, possibly Empidonax.

101

1, 1 Tree creeper, and 1 juv. Slate-throat. Blue & Black definitely in lead. Slate-throat definitely in rear. Group as a whole quiet but coherent. Working slowly, jumping up hill. Blue & Black ranging 10-20 ft up. Eating small fruits. Both flycatchers at similar elevations, flycatcher clinging. Tree creeper & Slate-throat ranging 6-15 ft up. Tree creeper on trunk of larger trees. Slate-throat in scrub.

Incidentally, fog is beginning to come into here now.

4:45 pm. A few hundred yards away. 17960 ft. See another small

106 ~~group~~ flock in part of forest where trees are taller. Includes at least 4 Blue & Blacks (1 juv) and 1 xanthocephala. All in tree tops 20-30 ft up. Young Blue & Blacks fighting among themselves. Blue & Blacks definitely in lead. Eating buds and small fruits. xanthocephala may not stay with group very long. 5:00 pm still watching same group. Actually there must be 6-8 Blue & Blacks in group. And now they are ranging 10-30 ft up. And xanthocephala is still with group. Keeping relatively high. xanthocephala f —————> Blue & Black. Group quite coherent, but not making very rapid progress.

Going on myself. 5:03 pm. Reach finca 5:15 pm.

August 11, 1965
Munchique

Going to work same place today as yesterday morning.
SEE TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENTS:

It seems likely that the Blue & Blacks were the "original" nucleus of the mixed flocks seen early this morning.

have written a new st. Everything quiet

For 1000 and into foggy night

25a. Same as 25b. The peduncles are yellowish-green and the leaves are greenish-yellow.

5:00. In the same road a large flock of *Myiarchus cinerascens* flies by along
with other birds. There are also some sort of a mixed flock here. 3 or
4 of the dark brown type *Myiarchus cinerascens* (same species seen on
Granada a couple of days ago). Having very low then second growth
edge and 3' - 4' up. Also 1 Yellowthroat 10' up in nearby tree. Birds
quiet. A single White Throated Hummingbird. —→ *Sitta carolinensis* type
seen then flies off. Then other few birds then disappear, while *Sitta*
carolinensis types continue on their way. (Birds are 2150 ft)

Then follow-group of Red Green Squalar-types down road;
and find that they really are the tail-end of a large mixed flock. Among
the other birds of the flock are 2 Yellow-faces, at least 1 Whitotrope, 2 Sittes,
1 GT's, at least 1 Cremoscopus, 1 juv. Thlypopsis (I don't know the
species - all I could see was orange head, with dusky crown, and olive
back), 1 Ensifera, 1 Empidonax type flycatcher, and various tree-creeper
143 Yers. All moving in light fog then very mixed, not too dense, obviously
ly rather young second-growth. The Squalar-types, the Thlypopsis,
the Whitotrope, and the Sittes always remain very low, 1' - 3' up. All ap-
parently feeding on insects, on leaves and twigs. The Ensifera, Empidonax-
type flycatcher, Yellow-faces, and Cremoscopus all seen 10-20 ft up. Tree
creepers ca. 10 ft up. GT's ranged from high to low, 1' - 20' up.
Group as a whole very coherent. But lead changes constantly. GT in lead
at least once. Empidonax-type flycatcher in lead at least once. Sittes
in lead at least once. Rather surprising; group as a whole very quiet.

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Big to crest of road 4:23 pm. (Singing) 3-5
pair of Blue & Orange feeding on small branches in trees 6-15 ft up. Then the Blue & Orange fly down to a
flock. Later includes Y. rufinucha, Y. atripileus, Y. yellow face, Y. ...
... all moving quite low in second growth to scrub 1-10 ft up.
... averaging particularly low. Blue & Orange bird in small tree 15
ft up. Group probably also includes some larger types in taller trees fu
rther away, but I can't identify them. Group is a whole very quiet
but also very coherent — moves off into forest quite rapidly.

It is my impression that "CN"s are less common today, when
fog is relatively light and patchy, than they were a few days ago, in
the same place and at the same time, when fog was thicker. Presumably
birds are relying on visual contact rather than audiotone now. I think
they don't vocalize any more than they "have to". This, in turn, would
I suggest that the noise in many flocks is an unfortunate byproduct.
It may be useful, on the whole, for a bird to vocalize, and vocalization
may be provoked by companions in flocks. But, in flocks, the vocaliza
tions probably are not always useful.

Certainly, it does seem to be true that mixed flocks are noisi
er, on the average, during the breeding season of most of the constituent
species, than during the non-breeding season.

A few minutes later, and a few yards down road, see another
single Sooty Thrush alone.

5:07 pm. Much further down road. Come across another mix
ed flock in region of young stunted but low, second growth. Group includ
es at least Y. rufinucha, Y. atripileus, Y. yellow face, Y. tree creeper. Others
All birds seen ranging 5-10 ft up. Group quiet but coherent. rufin

XVI
HO
156

18
ultra in lead at least part of the time

Blackburn 5:30 pm

COMMENT. Just in case some of my preceding notes are not clear... Most of our birds certainly are not breeding anywhere around here now. But a few others, e.g. Chlorospingus semi-fuscus, Atlapetes spp., and Coereba, may be in reproductive condition now.

August 12, 1965
Munichue

Going to work on top of Munichue trail again today. Arrive 5:38 a.m. Just getting light. Pretty cloudy. Very windy. And unbelievably cold!!!

First through sounds 5:44. Otherwise everything very quiet. Then a variety of bird sounds ca 5:53. But the volume is not very great. No sign of Diglossa song as yet.

Some White-bellied Flycatcher song in distance 6:01.

Sun coming out 6:15 a.m. Going down to USE zone 6:25.

19 6:30. See pair of Yellow-bellies 20-40 ft up in trees. Feeding on white berries. Noisy. But alone (as far).

6:44. Hear some Hemiprocne-type sounds low in scrub, without being able to see the birds.

It certainly would appear that mixed flocks usually are formed rather late in the morning around here now!

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

104 7:18 a.m. Back up in region "alpine scrub" ("AS") See single Yellow-belly 6 ft up in tree. It sounds as if there probably are other birds

reds of other species associated with the Yellowbills.

7:45 Along down foot path on west side of canyon. I have never been here before. The single Yellowbill. Definitely alone. 2 ft up on rock. No feeding on small birds.

It is turning, now, with now 6:30 AM. Sun shining brightly. Wind weaker than before. Going back along road path.

8:50 Finally in large mixed flock. Some of the usual places. One of our mixed second quartets, with a few others scattered tall mostly in trees. Group includes at least 3 Cnemidopus (probably more - 5 or 6), 2 GT's, 1 Yellowbill, 2 Blue & Oranges, at least 1 Whitestripe, 1 ♀ WCC, at least 1 Lette, 1 Cy, 1 Whitehead, at least 1 Atlapetes torquatus (!), several woodcreepers. Cnemidopus, WCC's, Whitehead, Cy, and Yellowbills only seen high in trees, 20-30 ft up. Woodcreepers probably have similar range. Whitestripe and A. torquatus only seen low in shrub, 6" - 1' up. GT's, Blue & Oranges, Lettes ranging all levels 4-30 ft up.

Group as a whole coherent. Noisy. Lots of "CN"s. Cy also Scups repeatedly. Pheas after pheas. All or most with "Tut" Intro Notes. NODWA. Cnemidopus apparently in lead most of the time. But Whitehead, GT's, Lettes, also in lead, occasionally, for brief periods of time.

GT's certainly eating fruits. Cowbird spp. certainly insects. The Cnemidopus fight among themselves (as usual).

The WCC's and the Lette(s) are not associating particularly closely with one another. But the WCC's are usually always further behind in the flock than the Lette(s). Neither Cowbird spp. shows any obvious tendency to associate with Cy.

Blue & Oranges frequently form the rear guard.

Group eventually moves down hill. Further into VSF

At one time a single Big Butthercupus flew over the flock. But apparently did not join it.

At another time a single ~~Albi~~ appeared out of low scrub, 20-30 ft away from flock. Silent and alone. Then hops up into tall trees and bushes, still more distant from flock. Possibly feeds on distinctive yellow flowers, some species favored by Albi and VB at Finca "Covana". Then flies into distant scrub. Although this bird made no overt attempt to join the flock, I think its original emergence from scrub must be considered an "intention movement" of exorting.

Cloud coming up 9:20 am

Same flock back 9:30 am. Now going rapidly uphill. Now we think it includes ca 30 birds. Including one Big Butthercupus (who does seem to have joined) 20-25 ft up in trees; 3 PL Atlapetes, ranging from ground level to 2 ft up; several Whitestripes, remaining low in scrub; and a larger variety of fernwaxwings, including 3 or 4 of the dull brown Squalaris-types.

The birds seen earlier are behaving much as before.

Big Butthercupus definitely in lead! Followed by GT's. Followed by Cnemidophorus, followed by the rest.

Atlapetes torquatus still definitely with flock. (I guess the species must be alloquacious here). Definitely bringing up the rear. But not associating particularly closely with PL's!!!

After most of flock has passed, single ~~Albi~~ appears, low fly, 2 ft up in scrub, 10 ft away from nearest member of flock. Quite silent. This is certainly same ~~Albi~~ seen exorting a few minutes ago. Note: the members of flock nearest to the ~~Albi~~ were not other Dia

lower.)

9:45. Now hear Dubonia singing up hill, just where I am. The
 hear (other) numbers of flock. So Dubonia must be around it '50.
 Leaving 10:06 a.m.

August 13, 1963
 Region of Uribe

Reach the highest point on the highway, just past the town of Uribe
 5:42 a.m. 8400 ft 2550 m. This area is facing more or less due West.
 Clear. Fairly warm. Everything quiet when we arrive.

5:50. Some throat sounds. Then the same "DC" as at La
 Palma. Then quite a variety of miscellaneous bird sounds.

This is area of mixed second growth and VSF.

Start Yellowface songs 6:02 a.m. NODWA. Again & Again.
 All NODWA. But bird noise in general quite loud and varied 6:07.
 All or most "DC" stopped. But Chloroceryle reunifera has begun
 its DC and R's.

6:08. See single Big Buttercup. Silent and alone 5-8 ft up
 in bamboo scrub (uh!) under mature trees.

There are lots of birds here. But mostly keeping under cover.
 More Yellowface songs. NODWA. Then Yellowface shuts up. Then
 I hear a few Altapetes Whistle songs. NODWA. Then Altapetes shut up. Then
 Yellowface(s) begin again. NODWA.

6:22. See single dull brown Synallaxis-type. Silent. Apparently
 alone. 6" up in scrub.

Everything much quieter by 6:25 a.m.

More *Streptopelia* White Group. NODWA.

6:25. See pair of *Streptopelia*, 2-3 ft up, in low but bushy second growth edge of field. Very noisy. Lots of "quitting" chatter. But apparently the birds can hear the other pair of PL's 100 yds away across road. Also also in low second growth.

Then *Dubonia* singing down hill.

6:35 a.m. See single Yellowbelly, about 10 ft up, feeding 3-4 ft up in second growth scrub. A few feet further on, see 2 Yellowbellies in tree, 13 ft up (one of them certainly is bird seen earlier). Also 2 PL's (probably also seen earlier) in same tree. Both Yellowbellies fly away long distance, across road. 1 PL f ———→ Yellowbelly. But only halfway. Then a bird returns the other way. (Probably I frightened this bird).

Then walk along ridge between East and West slopes.

More more Yellowface Group NODWA.

6:50. Come to "grove" of tall mature trees. There are several birds moving about in tree-tops. Not close together, but this looks as if the birds might be "preparing" to form flock. Can't identify any of them by sight. But I am sure that there is at least one Yellowface among them. Singing NODWA. Then a pair of *Cyanocephala* flies out of low bamboo scrub across road. Into trees where other birds are. This must be considered a case of *Cyanocephala* f ———→ group. Then *Dubonia* f ———→ *Cyanocephala*. Definite. But *Dubonia* starts to scrub. 5-12 ft up. Singing. Overlapping Yellowfaces. A single Black *Diglossa* (unidentified, but presumably ♂ *Albi*) appears very briefly in scrub, only a few feet from *Dubonia*. Obviously escorting. Silent. Then off immediately. Then a pair of *rufopectus* f ———→ group. Very

many "Questings" Ranging 10-20 ft up in trees. Then 2 low rings of group.

Clouds coming up 7:05 a.m.

Then at the end glimpse some pair rufous 3 ft up in scrub. Can't tell if they are associating with other birds now or not. I think they are alone.

7:21 a.m. See single Hummingbird feeding white flowers low second growth scrub. Alone and alone.

7:25 a.m. See group 2 adult and 2 juv. rufous. In low second growth scrub. There also are 2 or more dull brown Synallaxis types in same scrub. rufous ranging 1-6 ft up. Synallaxis - types from 6" to 3 ft up. rufous j → Synallaxis types. Then Synallaxis - types f → rufous. Then rufous fly across road. Synallaxis - types do not follow.

More Yellowface song 7:34. NODWA

See single Agelaius (real) alone

7:44. See 2 Yellowbellies and at least 1 PL Atlapetes, close together, 30 ft up in trees in VSF. Feeding in tangle of vines. Quiet. Yellowbelly j → PL. Then one Yellowbelly repeatedly supplants the other. Obviously hostile. Can also hear Yellowface singing not far away. NODWA. But I am not sure that this Yellowface really is part of mixed flock.

7:55. Some distance down road. Come across mixed flock which maybe partly same group. Now includes 2 Yellowbellies, 2 Blue & Blacks, 2 Yellowfaces. All 10-25 ft up in trees VSF. Group probably also includes 2 PL's, but I never get a good look at them. Certainly, a single White-throated Hummingbird "visits" group briefly. Group as a whole noisy. Very coherent.

8.10 am See single Cy, about 50 yds from where mixed flock
seems to have gone. Very low in second growth scrub 6" - 2 ft up. Si-
lent. Apparently not associating with group. (But I certainly am not
sure of this.) Then see Cy 30 ft up in mature tree. Another area,
but still about 50 yards away from group. Cy sings repeatedly.
Song mixed further with "Sil" Intro Notes. NOOWA. Then fly
away. Cy \rightarrow group in scrub!

The group is now back to slope facing West.

Modestly, I can see white Cecropias just a little way down
the slope. Further proof of humidity - if any is needed!

Everything dead about 8.28 am.

Then go down road a considerable distance. Near Dubuna sing
uphill 8.40 Go a little further down road (8.50 ft) and see a very lar-
ge mixed flock. Group includes the Dubuna, 2 Blue & Oranges, 2 Sittis,
1 Cy, 2 Yellowfaces, at least 1 PL Atlapetes, at least 1 Finch-like Tanager
or (definite - get good view - gray and black striped head, chestnut br-
east), others. Also 1 Squirrel (usual species, brown & rufescent).

Group quite coherent. Panning thru all sorts of scrub, including
bamboo, and more or less small trees scattered thru scrub.

Finch-like Tanager only seen low, 1 ft up. PL seen 2-6 ft up.
Dubuna & Cy 2-10 ft up. Yellowfaces 6-20 ft up. Sittis 10-20 ft up.
Blue & Oranges 2-20 ft up. Squirrel from ground to 15 ft up.

Difficult to tell who, if anyone, was in lead. Probably the Blue
& Oranges at least part of the time. Finch-like Tanager seen only at rear.
Dubuna usually toward rear.

Group as a whole moderately noisy. Lots of "CN"s. Dubuna
continues to sing for only a few seconds. But then some Diglossini begin

no to Aug. Phrase after phrase. At first rather low-pitched. Beginning with Zee zee zee... followed by Twitter. But then becomes more typically Cy-like. I think that all these phrases probably were uttered by Cy. (I know Cy was present - I saw it clearly). Haven't I heard Cy utter phrases beginning with 'Zee zee' somewhere else in the northern Andes (Paramo de Guasca, for example)???

Squirrel j \longrightarrow Dubium Then squirrel follows a path gradually diverging from that of flock \longrightarrow Until, eventually, it seems to have become completely separated from the flock

A few seconds after flock has disappeared, uphill, another Cy appears. Coming from downhill, but going steadily in direction in which flock disappeared. Utters "CN"s. As it happens, the path of this Cy passes close to the Squirrel. But it appeared to pay no attention to the latter.

9:40 a.m. Back to joint site. See single Yellowbills alone 20 ft up in mature VSF tree edge rock slide. Silent and alone.

Sun out again. Hot and still.

Leaving 10:07 a.m.

COMMENT: It would appear that the birds here are behaving in exactly the same way as the birds on and near Hunchique. The whole of the southern part of the Western Cordillera (Hunchique, Urubé, and the Tumbes) would appear to be essentially uniform!

Munchique Apr - May 1953

May 1, 2, 3
4, 5, 6, 7

No Inds seen alone

|||||
|||||

(11)

No Inds in flocks

(160)

(153)

41.78%

No flocks seen

|||||

21

No lps per flock

7	2
2	4
3	6
4	11
13	7
2	3

No H.O. flocks seen

|||||

76

24

3
3
2
3
2
7
6

Largest No. Inds 1 flock

7, 9, 18, 15

May 1	=	4 hrs	30 min
May 2	=	3 hrs	45 min
May 3	=	4 hrs	15 min
May 4	=	5 hrs	45 min
May 5	=	4 hrs	45 min
May 6	=	4 hrs	00 min
May 7	=	2 hrs	15 min

TOTAL = 29 hrs 15 min

Western Cordillera
 Lehmann Fork ~~San Joaquin~~
 April - May 1963 Hot Garden
 Mostly P.m.

Apr 30,
 May 1, 2, 3, 4,
 5, 6

No. Birds Seen Alone

|||||

(20)

No Birds in Flocks

(141)

(101)

84.43% !

No Flocks Seen

|||||

No App per Flock

13 ?

4

8

7

10

4

7

4

3

6

4

7

5

4

86

No H.O. Flocks Seen

|||||

Largest No Birds in 1 Flock

20?, 20

Apr. 30 = 5 hrs 15 min M

May 1 = 1 hr 45 min M

May 2 = 3 hrs 15 min M

May 3 = 3 hrs 30 min M

May 4 = 2 hrs 45 min M

May 5 = 3 hrs 00 min M

May 6 = 1 hr 00 min M

21 86

22 121

23 141

24 141

20 hrs 30 min

Western Cordillera - Farallones
May, 1965

May 26, 27,
28, 29

No Inds seen above

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79.76%

No Ends in Flocks

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No Flocks Seen

DATE: 11/11/11

Pro H. O. Flanders Sec

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Largest No. Inds in 1 Week

9, 5, 11, 10, 20

Two spp per flock

6 13

5 8

3 3

72

4 9

9 8

5 10

2

2 13d

1

2

2.

54

11

12

May 26 = 2 hrs 30 min

May 27 = 17 hrs 15 min

May 28 = 17 hrs 00 min

May 29 = 2 hrs 45 min

17 hrs 30 min

Munchique - Aug 1955

Aug 19, 29
12

No. Inds seen alone

|||||

(29)

No. Inds in Flocks

||||

(154)

85.08%

(141)

No. Flocks seen

|||||

No. large or Flocks

2
19
3

11
17
3

5
3

3
11
13

20

29

24

No. H. O. Flocks seen

|||||

Largest No. Inds 1 Flock

13, 31, 24, 25

86

Aug 7 = 5 hrs 00 min

Aug 8 = 4 hrs 30 min

Aug 9 = 4 hrs 15 min

Aug 12 = 4 hrs 15 min

TOTAL 18 hrs 00 min

La Palma - Aug 1965

Aug 11

No. Inds. seen
111

No. Inds. in flock
11 111 111 111 111 111 111 111

(47)

11.04%

No. Flocks seen
111

No. Inds. in flock

5

4

2

10

1

25

No. H.O. seen
111

Largest No. Inds. in flock
5, 20

Aug 10 = 3 hrs 15 min

Aug 11 = 4 hrs 00 min

TOTAL 7 hrs 15 min

La Cuyamaca - Aug

Aug 7, 8, 9
19, 17

No. Birds Seen Alone
141

(141)

(141)

96.27%

No Birds Seen in Flocks
141 141 141 141 141 141 141 141 141
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141 141 141 141 141 141 141 141 141
141

(156)

No. Sp. per Flock

7

5

10

4

8

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12

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6

4

109

No. Flocks Seen
141 141 141

No. H. O. Flocks Seen
141 141 141

Largest No. Inds. 1 Flock
7, 9, 12, 15, 21

Aug 7 = 4 hrs 00 min
Aug 8 = 2 hrs 15 min
Aug 9 = 2 hrs 30 min
Aug 10 = 2 hrs 30 min
Aug 11 = 3 hrs 15 min

TOTAL = 14 hrs 30 min

May 2, 1955
 Pajon of Pajon

Along road to Maricao, Pajon, Bogota, etc.
 5:20 am 5:20 am 5:20 am 10,272 ft Still too dark to see

5:33 Pajon, very little light. Very misty, small area of pine scrub along stream. The water is cloudy, and there is a very light sprinkling of rain. Short bird noises heard. 5:38. Pajon Sparrows. Also thrushes. Sound like the usual scuttles.

5:50 am Go on to another area, 3210 m, where there are hedge-like patches of pine scrub-trees, road and grassy areas. Everything very quiet, nothing I hear. 6:00 am Go on to another area.

Today at last, this area is less a lot more humid than Maricao. 6:12 am. See a single Screech Owl alone. Bright eye ring. There are lots of the cup-shaped dark red flowers favored by Lays in the Eastern Cordillera around here.

A slight increase in bird noises 6:20. Hear what are either Laysong or Lays-like phrases. White-throats.

6:23. See pair PR Atlapetes moving low in hedge. Uttering "beet" notes and one burst twitter "que ting." Definitely alone.

6:31 See what seems to be North American Waterthrush in edge of scrub. Alone.

There are several kinds of hummingbirds here. Small green and large brown. But apparently no Lays.

6:38. Hear definite Laysong. Prolonged and indeterminate. By bird hidden large clump bushes in "hedge".

Back to forest 7:15 - 7:24. Within a while
to be increasingly gradual. Still 2 or 3 hummingbirds
see more hummingbirds and a couple of rufous
the usual more of each themselves alone. No rufous in pas-
ture

Still more hummingbirds and themselves alone 7:24-30. Rain start-
ing to let up now

Now 7:13, almost completely stopped. There is, perhaps, a very slight
increase in the faint bird noises around here, but not much!

Catch occasional glimpses birds, rufous and parrots, in scrub, without
being able to identify them. I. E. there probably are plenty of birds here. It is just
that they are remaining hidden.

Other? Near some places which may be other songs without R's. 7:28
Going uphill. 7:36. Reach point just below tall, obviously mature
forest. 3250 m. 10,550 ft. Still nothing much visible except hummingbirds

This is rather reminiscent of the Quito region on a bad day

Incidentally, the forest here also looks like what I have been calling
of "upper subtropical". But it obviously must be the kind called temperate by
others. It is just that its "physiognomy" does not look very different from up-
per (or lower) subtropical.

Feb? 7:45. Near La Laguna second growth scrub below forest. Or is
this Whitetart?

7:50. Starting downhill again. Now there is definitely an outburst
of miscellaneous bird songs

4 See a couple of White-bearded Flycatchers alone. High in tall mature
trees standing isolated in midst of low scrub. 40 ft up. None but alone.

8:20-8:30 a.m. See near ca. 100 ft. In tree, probably second growth
20-25 ft up. I saw a lot of low second growth scrub. When first seen
5 there are a lot of Pseudosp. gr. verticillata, a Swainson's (?), and 1 Hoary Thrush
6 also in the tree. All within 10 ft of each other. Also I see there is also 1 Yellow
7 finch & 1 Whitstart. All fairly quiet. Some 10 m. Then the Pseudospungus
fly over a tree 40 ft away. A mature tree standing isolated in scrub. They app-
arently are not followed by Swainson's, Hoary, or Whitstart. Then the Pseudo
8 sungus feed in the mature tree 30-40 ft up. Quiet. And now I see there are
2 Cys (definite) with them. One is apparently new (dull blue in color, but with
apparently complete mark). Difficult to say who is leading whom. Cys silent
9 or uttering only "en" type notes. A single White-headed Flycatcher →
group. But then it appears now leaving. Then the Pseudospungus fly back
to first tree. Can't see if they are accompanied by Cys or not. By this time
the Swainson's, Hoary, and Whitstart seem to have disappeared. I have also
lost sight of Cys. Pseudospungus remain visible for a while, then I also lose
sight of them. This flock certainly did not appear to be very coherent. And it
certainly did not make progress in any given direction during the period it
was under observation.

Incidentally, just about the time the flock "melted away", the rain
started again, gently.

6 Going on downhill, see several (now) Hoary Thrushes and White-
headed flycatchers alone.

10 CORRECTION: At least one of the White-headed definitely associated
with mixed flock. Come across flock 8:45 a.m. Go thru clumps second growth
scrub and small trees in pasture. Ignoring partly same group seen earlier. Group
15 (now) includes, 1 Whitehead, 2 Swainson's, 3 Butorampus eximia, at least

16 ¹⁶ V (adult) Apparently no Pseudopod ... bellies definitely jumping up near ... seems to be quite ... attracted to the annas ... Y. Cy ... repeatedly. Long twitters. Can't tell if they have 7 ... or not. There also is a lot of hummingbirds around near the ... but they don't seem to be integral members of it. The most common species is the "Cinnamon" one - which is all over the place everywhere here.

There was relatively little rain during the period the flock was ... d. But now it is coming down harder again 9:07 a.m.

17 ¹⁷ 9:12. Down by road. See single Kaf (definite) alone. Feeding red and white flowers edge second growth scrub. I have seen Kaf feed same species elsewhere in Andes. This bird 4-10 ft above ground. Once, one of the local Cinnamon Hummingbirds flies straight toward the Kaf. I thought this was going to develop into an attack. But then the Cinnamon perched on a branch, only 2 or 3 ft from the Kaf without any (further) sign of hostility.

18 ¹⁸ 9:30. A little further down by road. Flush a pair of PR's from very low scattered scrub. Only 1-2 ft above ground. They fly down hill into small trees and tall bushes along stream. Perch and feed 10-15 ft above ground. Utter "Tut" Notes and Twitter "Greetings". Then I see pair Yellow bellies fly into same clump trees and bushes. Land about 20 ft away from PR's. But then the 2 species gradually work their way closer together, by small hops. I think this should be classified as a joining attempt by Yellow-bellies. Then a single Kaf joins group! Both Kaf and Yellow-bellies quiet. At least 4 times, during the next few minutes, one or both Yellow-bellies follow → PR! And once PR → Kaf! This is a very well integrated group, but it isn't going in any one particular direction very

For "Incidental" it was raining from quite hard during the whole period of observation.

From 2:30 pm to 3:30 pm I saw one Yellow-bellied and Proboscis saw one. I am confident that the Proboscis was seen a few feet up hill from the Yellow-bellied. Certainly, the two species were found in very similar vegetation.

Leaving 9:45 am

Other

On way down, on Road from Purace to Papayan, 9200 ft., region of drier looking, wood growth scrub, hear noisy phrases which are almost certainly uttered by Otter. Proctos with sub-terminal R's. (The only other possibility is that these phrases were uttered by Bats.)

COMMENT. It looks very much as if the degree of gregariousness here will be much the same as in the Eastern Cordillera. Or, possibly, intermediate between the Eastern and Western Cordilleras. Certainly not very much like Quito. This would seem to indicate that the "frontier hypothesis", by itself, is an inadequate explanation of all the variations in gregariousness.

My observations this morning would suggest that bad weather, i.e. rain, has a detrimental effect upon the formation of mixed flocks here.

NOTE: The whole Purace region (i.e. near the town of Purace itself) is on the western slope of the Central Cordillera. I.E. it probably gets as much rain as the eastern slope of the Western Cordillera. Certainly it is very humid.

I am becoming more and more convinced that such species as the Yellow-belly and the PR Atlapetes are confined to relatively humid environments.

May 7, 1973
Tucson, Arizona

Arrive same place where most of the work done yesterday 5:30 a.m.
Still fairly dark. Clear (altho it looks as if fog may come in soon). Cold.
Lots of Audubon Sparrow song 5:35. Also some Thrush notes. Some
some sub-oscines.

First *Atlapetes White* song 5:45 or so. Heard in area PR's seen yesterday.
Only one or two phrases. 4 or 5 song

Certainly, my birds are not breeding here now.

Hummingbirds out feeding already 5:47

9 5:55. See 2 White-bearded Flycatchers. 6-10 ft up in second growth
scrub. Apparently alone.

See single Rusty Thrush alone. And then another. And then 2 or 3 more!
11 7:00 a.m. See same 2 White-bearded Flycatchers. Now, but alone

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

See another single Rusty Thrush. In flight. Followed by Cinnamon!

13 7:13. Slightly uphill from road. See pair Towhees in clump low
in fairly high scrub, on edge pasture 6-15 ft up. Noisy. Apparently alone. (But
I can hear White-throat not far up hill.) Towhees fly up in that direction.
24
seen.

8:12 a.m. There is no flock in area where *Pseudospingus* flock seen
yesterday. Everything quiet here now.

Incidentally, I have seen lots more single Rusty Thrushes alone here
than are recorded in the preceding notes.

Sun starting to come out again 8:35

26 8.27 Flying above road less mixed flock. Includes 2 *S. virens*, 1
26 *S. virens* (1) (the same species as on Muncie), 1 juv. *Cy*.
The number is 15 ft above ground. *Winter* out; \longrightarrow *Cy* *Cy* \longrightarrow
 \longrightarrow *Winter* *Winter* flies away, the other birds do not follow,
at least immediately.

9:17 Another down bill. See single Firebelly (one of the same individuals) in top small tree. All feed alone. Then single Yellow-faced Whitestart out of —————> Firebelly. Then Whitestart flies away. Firebelly f —————> Whitestart

Slight rain starting 7.20 a.m.

See with and what may be seen. Aqueducts go from level to level
in direction in which Signaling and Assistant went. Then, a few seconds
later, we reach Dulima (Definite) following same route in same direction.

Finally leave 10:20 a.m.

COMMENTS:

I. Mixed flocks certainly were much less common today than yesterday, in spite of the fact that the weather was so much better today than yesterday. This would suggest that here, as in the Western Cordillera, bad weather encourages the formation of mixed flocks. If so, why did I get the impression yesterday that the mixed flocks were most conspicuous, and probably larger, during slight, temporary, alleviations in the abominable weather? Possibly moderately bad weather is encouraging, while extremely bad weather is discouraging ???

II In general, the birds here, today and yesterday, would appear to be almost exactly intermediate between those of the Quito region and those

e of the Eastern Cordillera (and/or the Western Cordillera). But their behavior may be more like that of the birds of the Eastern Cordillera.

May 12, 1965
Region of Pinar

Arrive same place yesterday 5:45 am. Getting light. Cloudy, but no rain - yet. Andean Sparrows in full song.

Arrive general area where Allen and I were yesterday 5:55 am.

See some single Sooty Thrushes alone. And then several more, both on ground, in grassy pasture, and in scrub.

Everything very, very quiet 6:40. Haven't even heard White-bellied this morning!

7:06. Blue Toucanet appears. Moving through trees and low scrub. Quite alone.

16 Going up hill. 7:50. ^WThree Firebellies fly by. Definitely alone. Uttering "fret" notes.

17 Then see another Firebelly. Definitely different individual. In small tree further up hill. 20 ft above ground. Alone. (So there are at least 4 Firebellies in this area!)

18 8:25. See pair Firebellies (again). Alone 15 ft up in tree. It is beginning to look as if the Firebellies here are less gregarious than in some other parts of the Andes. Apparently tending toward the condition of the Firebellies near Quito.

21 33 8:42. Again see pair Firebellies. ^WGoing from bush to bush scattered in scrub 6-10 ft above ground. Noisy. Apparently alone at first. Then

34 followed by some more above (not identified). Then alone again (possibly 5-7 ft up in low scrub).

9:02. See single Whitebeard alone 25 ft up in isolated tree

36 + 37 9:04. Just as light rain starts. Mixed flock. Includes at least 2 Eximias, Pseudospingus, Yellowbelly. Eximias def with in lead. Pseudospingus follows and joins them repeatedly. Yellowbelly also f → group. Then Yellowbelly → Pseudospingus. Then Eximias and Pseudospingus fly on. Yellowbelly does not follow.

23 A minute later see single Yellow-faced Whitethroat in another area alone. Low scrub. 3-4 ft up. Sing. Then silent.

(NOTE: Flock ranged thru low scrub, 6-15 ft above ground; also into tall trees, 20-30 ft up. All birds moving at approximately same levels.)

35 9:13. See two Whitebeards alone. In low scattered scrub. 4-5 ft up. Fairly quiet.

Rain stopped 9:15. But it certainly seems to have brought a lot of birds up into visibility and activity!!! There also is a lot more in the way of bird song now than earlier.

Now flock moving back. And it seems to have grown by accretion! Now includes many more birds. I probably didn't see them all, but

40 I did note the following: the Eximias as before; at least 2 Pseudospingus
45 at least 3 Whitebeards, 2 Sittis (!). Flock moving thru region of very diverse vegetation. Scattered tall mature trees, with lots of epiphytes. Also scattered patches low scrub. All intermingled with open patches bare pasture. The Eximias and the Pseudospingus stayed in the trees, 20-40 ft up. Pseudospingus picking insects off leaves. The Whitebeards and the Sittis ranged thru both trees and low scrub 6-40 ft up. Sittis pick

ing insects off leaves both places. The flock was moving around in a rather confused fashion. Difficult to tell who was leading it. Scot. Flycatcher was at one point. Possibly Sittis at another. Flock was joined by Adult Cy. Came at different times and left at different times, but their movements in flock certainly overlapped. They did not, however, associate with one another. Both Cy stayed in trees 20-30 ft above ground. Flock also joined by 1 Laf. Also in trees, 15-20 ft above ground. The Cy stayed with the flock for 2 or 3 minutes, each, then disappeared. The Laf stayed for a minute or less. Incidentally, there was at least one Cy with the flock when the Laf joined. Glio associated with the flock, sort of on the near outskirts, were a single CC and a single PR Atlapetes. Both in low scrub, 2-5 ft up. Both silent, and both disappeared soon. They were not, however, together (at least 20 ft apart from one another).

The different species of Diglossini in this flock showed absolutely no tendency to associate with one another. Nor did they show any hostility.

Flock as a whole was noisy. Cy (s) sang repeatedly. Long twitters. Some with Intro Notes, some apparently without. Evinnias, Pseudospingus us, and Whiteheads uttered a variety of noises. Laf, like the CC and PR, was silent. Sittis uttered at least 1 "Greeting" Twitter.

Pseudospingus may be an obligate commensal like most Conversus trium species.

I think it must be significant that there were no Firebellies with this flock. Although I know that there are at least 4 individuals of this species not too far away. Also significant that Yellow-belly did not continue to associate with the flock very long. (Incidentally, the Yellow-belly, when it was with the flock, was a few feet higher, in altitude, than any Fire

hills. I have seen here - yet.)

Why were there no more with this flock? Is this altitude too high for them?

Very light rain started and then stopped again during this second period of observation of the flock.

Flock eventually goes down hill out of sight. Whole area quite quiet now, 9:55 (except for some thrush sounds down hill)

10:07. Going down hill. Come across White-headed apparently alone in tree. Very noisy. 20 ft up.

Many single when in tree 20 ft away. Uttering lots of them, single, joined together. This certainly is the species which has been uttering the peculiar twitters of this type around here which have been puzzling me (because I was afraid they were diglossini and I couldn't identify them).

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENT: This morning's observations would seem to confirm, more or less, what was seen on previous days. Mixed flocks here seem to be generally comparable to those in the Eastern Cordillera. (But) they are most highly developed in slightly or moderately bad weather. The important nuclear species are Butorhynchus evinnia and Pseudospingus. Possibly also White-headed Flycatchers (they seem to join mixed flocks more frequently, and are more obviously active nuclear, here than in some other parts of the Andes.) The Sittas also are extremely important (passive nuclear or passive-cum-active nuclear) whenever they are present. The two Poecilothraupis species, the other Diglossini, and the Yellow-faced Whitestart seem to be less important. (Perhaps some of these species are less important in mixed flocks here than in some

other parts of the Andes. Is it purely coincidental that there are also the species which extend to the Quito region ????. The role of *Dubusia* is dubious. Perhaps it is an active nuclear species or a regular attendant.

This afternoon working well-grown second growth woodland just outside de Popayan 1730m 5900ft 3:50 pm

See single *Scap* alone. Top tree, 25 ft up. Silent. This species does seem to be a commensal of man around here.

Quite a lot of BT's, flycatchers, and Goldfinches about.

Single *Tangara*, which is either *cayana* or (more probably) *ruficapilla* a, joins → BT.

Unfortunately, it is raining now.

See a couple more *cayana* or *ruficapilla* alone. 20 ft up in tree. (They look greener, underneath, than the *cayana* I remember near Merida, but perhaps they are not green enough to be *ruficapilla*.)

There are a lot of voices and/or quackets around here, but I have yet to see an XCC. 4:10 pm

4:25. Hear what might be *Cy* song in distance! First twitters with the "Int" Intro Notes. Bird in top tree, 30 ft up. See it fly away, but can't identify it.

4:31. See single PST alone. Silent.

Then see single Slate-throated Mite-eater. Silent and alone.

Then see what might be pair of *Bonin* fluttering thru trees in distance.

Bird uttering "Cy-like" songs back again. Getting closer, I discover that they do not have Intro Notes. Each phrase might be transcribed by something like "Zee zee wee wrrm voooyoo". Could this be BG ??? (The no

tes which I mistook for notes earlier probably were uttered by many hummingbirds. (See - see) note up 4:40 pm

Now I definitely do see a couple of BG's in tree 40 ft away chasing one another. Also see near a group 3 cayana-ruficapilla. The two species approach - quizzing one another. BG's fly off. Tanager does not follow.

Now I hear song phrases, like one transcribed above, coming from direction in which BG's went. I am now sure that it is the BG's who are really uttering these phrases.

See small hummingbirds feeding in Eucalyptus-like flowers of tree ("Guava") in which BG is feeding. No sign of hostility between the hummingbirds and the BG (as far as I can see - which isn't a great deal).

All the phrases which I perceive are by BG are single.

Rain stopped now. But light is atrocious!

Go on a little further. See 2 (more) BG's feeding on Guava flowers in just the same way that they would on Eucalyptus. Alone. Uttering "CN"s. 4:59. Actually it is a group of 3 birds feeding in this tree. And one of them looks suspiciously like a CC (altho I can't be absolutely sure in this light).

All feeding within a foot or so of one another, without overt hostility.

See single ♀ Blue-capped Euphonia alone, small orange tree, 6 ft up.

Single cayana-ruficapilla perched top bare tree. 30 ft up. A pair

of BG's j → tanager. Tanager flies off. BG's f → tanager. Perhaps the BG's really are gregarious here???

See some more BT's alone.

Now see couple BG's alone in low scrub (blackberry tangles).

There really are a lot of BG's here. Probably as many as in Florida.

Leaving 5:15 pm.

May 11, 1965
Regent of Prince

Arrive same place as yesterday morning 8:34 a.m. just starting to get light. Day approximately 3/4 overcast. Cold.

Audubon Sparrows singing. Sooty Thrushes uttering a variety of notes as usual.

26 Have had several observations groups 2 or 3 White-throats alone (see Dyer's Notes). In trees and scrub. Noisy. Song and SHN's (sharp "Is" or "I" notes).

27 Then, 6:21 a.m., see single Dulcinea alone. Perched top isolated, partly broken, mature tree, 25 ft up. Flies off immediately.

See single Sooty Thrush alone.

See single Sooty Thrush chasing montane cotinga (usual species) in flight. Then Sooty accelerates. May actually attack cotinga. Then 2 birds separate. Land in same tall isolated tree, 35-40 ft up, 20 ft apart. Both seem to relax. 6:56

28 Then see single Fimbrellus moving rapidly thru large area low scrub. Only a few ft above ground. Silent. Definitely alone.

32 Then see pair Fimbrellus in low tree. 20 ft above ground. Then alone.

33 See single Sooty Thrush in this tree. Single Alcedo → Fimbrellus. The

34 Alcedo flies away. Nothing follows. Sooty moves over nearer to Fimbrellus. Finally only 1 ft away from them. Then Sooty flies off. Fimbrellus do not follow.

35 Then Fimbrellus fly off in different direction.

7:25. Near Dulcinea singing uphill. Going uphill myself. See one Sooty Thrush chasing another. Alone.

Then see more *Junco* and single *Sooty Thrush* about 4 ft apart in small tree (see later - but the two species were seen together earlier). Both silent. *Junco* fly off. *Spizella* does not follow.

34 Then see single *Dubiusa* definitely alone. Feeding 40 ft up in tall tree low in edge pasture. Fly off into low scrub.

36 Then see pair *Junco* alone, small trees, 10 ft up. Quiet.

37 Some distance away, see *Spizella* fly over area covered pasture and a very low scattered scrub. Flying low.

17:50 See *Dubiusa* alone feeding in low scrub 2-3 ft above ground.

In pasture common

Some CR &
Hiffy.



Proportions more or less correct
Very fresh-like

See more single *Sooty Thrushes* alone.

It is clouding over now 17:55 a.m. Fog appearing in distance. Wind also increasing a little.

38 Again catch brief glimpse *Dubiusa* 2 ft up low-scattered scrub. Silent. Definitely alone. Obviously same individual seen before.

Fog coming in 8:15 a.m. Still very thin.

A thought has just struck me. I have not seen or heard White-eared flycatchers here this morning yet. Does this mean that they are away, travelling with some mixed flock elsewhere?

Everything has suddenly turned very quiet - now that fog is coming in. The fog here certainly does not seem to have stimulated either vocalizing

ation or activity

Up ridge tall forest 9.00 am. Nothing seen.

Going down hill 9.06. Rain starting.

Then half flying in scrub until up at edge tall forest.

91

9:26. See single *Swainson's* alone. Apparently alone 6 ft up in moderate tall, thick scrub. This is an area where Blue & Orange seen this morning. Scrubby and sitting 7-10 ft. about 1 ft under canopy of scrub. Trying to keep out of the rain.

COMMENT: It is possible that the *Swainson's* is comparable to some others of the local species. I.E. less gregarious here than in some other parts of the Andes. "On its way" to becoming non-gregarious, as in the Quito region.

Working same place this afternoon as yesterday afternoon. Arrive 3:05 pm. Hot and "awful". Looks like storm coming up. Everything quiet.

Lots of Goldfinches around. Apparently same species as in Chiquiza.

3:18. See a single *Hate-throated* *Whitethroat* alone. Flycatching low in scrub. Silent. 1-6 ft above ground. Then, in fact, I see that there is really a pair of the birds here.

3:28. See single *Scrub*, *Guy*, in tree where BG's seen yesterday. But BG's not around at the time.

Wind increasing 3:30 pm.

See pair *ayana-ruficapilla* alone. Silent. Top tree 20 ft up.

Have seen several pairs BT's alone. (Unfortunately, however, there are a lot of birds moving thru tree-tops from time to time which I can't identify so I can't rule out the idea that mixed flocks occur here.)

3:55. See single ♂ Blue-capped *Euphonia* alone. 30 ft up in tree.

More Red-tailed White-eyes alone 4:08 pm

Large group of 20-25 together. Some alone

One large group of 20-25 together. Some alone

Some are flying. I haven't heard any BG's singing yet (4:15) ? Do some birds seem to perch on exposed limbs ?

See a small group of hummingbirds feeding on grass flowers. Exact same tree where BG's fed yesterday.

Little brief glimpse dark bird passing low thru very dense scrub.

Heard lots high then distinctive "Secret" Notes. Presumably Atlapetes. Either torquatus or (conspicuously) grunni-nus. Alone

Rain 4:33 pm Leaving

COMMENT: Although my observations this afternoon were very poor and sparse, they would suggest that mixed flocks are at least rare, here, at this relatively low-altitude. As in Merida.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

May 12, 1965
Region of Purace'

Arrive same place as yesterday morning 5:25 am Rain and fog!
Quite impossible to work for the time being

Audubon Sparrows and Thrushes making usual noises 5:45 am

Go on to another area. Low thick scrub. Arrive 5:55 am. 3210 m.

10,350 ft. Fog & rain not too bad now. Going to try to do some work

Everything dead quiet 6:05 am

Then hear some Basileuterus type songs in distance. Also some Tou

can't type words. One White-throat (presumably Yellow-faced) song is now indicated by this natural-looking sound, there are no more of them now. Certainly no dark red cap shaped ones. I & the other (murmured) Diglossini (and many hummingbirds) must be much more common in the second growth here than in mature or more mature scrub.

6:25. Now beginning to see a few (or identifiable) birds moving around in distance. NOTE: Altho the weather is not too bad now it poured all night. It may take the birds some time to recover from the sleep.

See 2 Green III Hummingbirds alone. One chasing the other in flight. Silent.

Rain itself almost stopped 6:33 a.m. But fog is still thick.

6:40. See pair Black Orange Tanagers distant tree. Pranging 10-20 ft above ground. Definitely alone. Perhaps this species is not gregarious here? If so, why doesn't it occur in Quito region.

NOTE: I forgot to comment on one point yesterday. There were a surprising number of inter-specific disputes yesterday (quite apart from encounters between species of Diglossini scrub complex). Is this correlated with the fact that some species are becoming non-gregarious here?

Now fog is lifting, but rain is getting worse.

6:47. See single Finch-like alone. Very low in thick scrub. 2 ft above ground. Silent.

At same time, hear Laf songs in distance.

6:58. See single Laf alone. 6 ft up in dense scrub. Utters a few "le et" notes. Then flies on.

There seem to be few or no footy Thrushes here. But lots of furn birds. Very different from the other area here where I have worked!

444 Then after 10:00 AM on dense scrub 12:04. But then see that they are a
terrestrial species. See also 12:04. 12:04
445 because of 12:04. 20. Low scrub edge highway.
446 12:05 the birds are all perched low and close. On ground and low in
a young yellow second growth between high way and mature scrub.

447 12:06 singing from trees to trees. No other songbirds audible. When
448 12:07 it is quite silent.

449 Then see single Firebelly, alone 12:08 up small tree. Silent
450 12:10 see single Firebelly, 12:10. Then mature scrub. Alone
451 12:11 still in the way. But soon moving to above through clouds.

452 All the same time. and probably not very similar. 12:12 are singing more fre-
quently. Still no other song. No other birds audible.

453 There is one aspect of the behavior in the whole song now, which
I have forgotten to mention. The notes of the Larks here are then and "reedy".
454 The notes of their song could be described as having a faint "rattle" or "tink-
le" sound. Most unlike the Yellow-faced Whitestarts. The notes of their song
are clear and full. This is one of the best distinguishing notes between the
songs of the 2 species.

455 4:14 See another single Firebelly, alone. In flight.
456 Well Well Well! Definite mixed flock. Go up high. Black area, 32-
55 40 m. Edge of mature forest with lots of tall trees. See single Blue & Orange
457 4:15 Feeding in tree 10-25 ft up. Followed by single Firebelly. Ranging at same hei-
ghts. Birds usually 15-25 ft apart. Silent. Blue & Orange certainly picking insects
off leaves. Firebelly apparently not feeding. Then a whole group of birds
appears. All close together. Moving thru scrub of medium height (this scrub
is partly burned). In direction of trees. Apparently following Firebelly and

57 Blue & Orange Just came a group of 5 birds. 3 all-gulphous *Synallaxis* (q. all)
61 ite probably same species seen in Eastern Cordillera). A large blue, yellow-bellied
e and black finches or tanagers (see LXXXIX). I saw one of each of
one another 3 ft above ground. The LXXXIX was silent.

62 Yellow "CN" type notes. Following 100 ft up, in a pair of PK. *Synallaxis*
When they first appeared they were 5 ft up in a tree. - LXXXIX
groups. When they came back at a later time. The PK's were silent. The
following lots of miscellaneous notes. Also some lower notes. Meeting.
Then all the birds move off. Apparently in exactly the same order they arrived.
ed. Going uphill into forest.

Just before I became aware of the Blue & Orange and Firebelly, I saw
64 a single ^{yellow} ^{bellied} *Whitethroat* 20 ft up in tree, about 50 ft away from the
tanagers. Silent. As far as I know, this bird did not join the group.

This flock was seen ca. 8:15 a.m. Rain almost stopped. But sun
gone behind clouds again.

Everything very quiet now 8:45. Going downhill again.

65 ADDITION. Just as the *Synallaxis* - LXXXIX group appeared,
a single *Laf* joined flock. In scrub. 15 ft up. Quite silent. Stayed with the
group for less than a minute. The *Laf* here certainly do "erect" flocks as
(relatively) frequently as any non-communal *Diglossini* anywhere.

49 9:00 a.m. See pair Blue & Orange tanagers (possibly same pair seen
earlier) feeding in small trees, 6-15 ft up, in dense mature scrub. Silent. Ap-
parently alone. (There is a single *Oreotheca* in tree about 20 ft away from the
tanagers for a minute or so. But the 2 species do not seem to be paying any
attention to one another.)

9:15. See single sooty *Thrush*, silent and alone, in low scrub by

SEE ALSO TODAY'S NOTES ON MIXED DISPOS. II

EXTRA COMMENT: Today's observations were in ~~the~~ confirmation of my earlier impression. None of "my" species is being seen now.

May 14, 1965
Region of Ponce

Arrive same place as May 12, 3:15 pm. Light rain.

Walking along road. Everything very quiet. Rain stopping - but fog coming in 4:02 pm

33 ~~1st~~ ^{2nd} ~~3rd~~ ^{4th} ~~5th~~ ^{6th} ~~7th~~ ^{8th} ~~9th~~ ^{10th} ~~11th~~ ^{12th} ~~13th~~ ^{14th} ~~15th~~ ^{16th} ~~17th~~ ^{18th} ~~19th~~ ^{20th} ~~21st~~ ^{22nd} ~~23rd~~ ^{24th} ~~25th~~ ^{26th} ~~27th~~ ^{28th} ~~29th~~ ^{30th} ~~31st~~ ^{32nd} ~~33rd~~ ^{34th} ~~35th~~ ^{36th} ~~37th~~ ^{38th} ~~39th~~ ^{40th} ~~41st~~ ^{42nd} ~~43rd~~ ^{44th} ~~45th~~ ^{46th} ~~47th~~ ^{48th} ~~49th~~ ^{50th} ~~51st~~ ^{52nd} ~~53rd~~ ^{54th} ~~55th~~ ^{56th} ~~57th~~ ^{58th} ~~59th~~ ^{60th} ~~61st~~ ^{62nd} ~~63rd~~ ^{64th} ~~65th~~ ^{66th} ~~67th~~ ^{68th} ~~69th~~ ^{70th} ~~71st~~ ^{72nd} ~~73rd~~ ^{74th} ~~75th~~ ^{76th} ~~77th~~ ^{78th} ~~79th~~ ^{80th} ~~81st~~ ^{82nd} ~~83rd~~ ^{84th} ~~85th~~ ^{86th} ~~87th~~ ^{88th} ~~89th~~ ^{90th} ~~91st~~ ^{92nd} ~~93rd~~ ^{94th} ~~95th~~ ^{96th} ~~97th~~ ^{98th} ~~99th~~ ^{100th}

2 Lap here. Get glimpse of what looks like supplant

Fog lifts temporarily 4:37. Now sun trying to drive thru clouds
4:42. No outburst of bird sounds or movements

41 4:50. See single Whitehead alone. Top small tree in scrub 20 ft up. Uttering a few "ca"s. Then hear some other bird sounds in neighborhood. Hummingbirds starting to fly around and feed

75 ~~HO~~ ⁷⁵ ~~76~~ ⁷⁶ ~~77~~ ⁷⁷ ~~78~~ ⁷⁸ ~~79~~ ⁷⁹ ~~80~~ ⁸⁰ ~~81~~ ⁸¹ ~~82~~ ⁸² ~~83~~ ⁸³ ~~84~~ ⁸⁴ ~~85~~ ⁸⁵ ~~86~~ ⁸⁶ ~~87~~ ⁸⁷ ~~88~~ ⁸⁸ ~~89~~ ⁸⁹ ~~90~~ ⁹⁰ ~~91~~ ⁹¹ ~~92~~ ⁹² ~~93~~ ⁹³ ~~94~~ ⁹⁴ ~~95~~ ⁹⁵ ~~96~~ ⁹⁶ ~~97~~ ⁹⁷ ~~98~~ ⁹⁸ ~~99~~ ⁹⁹ ~~100~~ ¹⁰⁰

5:07. See large mixed flock. In small trees, alpine scrub, at first group includes 3 Whiteheads, 1 Towhee, 2 Blue & Orange Tanagers, 3 Black & White's (Toucans or Hemispingus - no. LXXXX), 1 tree creeper, 1 of the little streaked flycatchers which utter blue-like R's. When first seen, Whiteheads in lead. Towhee f → Whitehead. Then comes the tree-creeper. Then the little streaked flycatcher. Then the 2 Blue & Orange Tanagers. Then the 3 Black & White's. Then the Towhee joins over the Whiteheads and takes the lead. Whole group moving rapidly thru the trees.

The birds 10-12 ft above ground. Then, suddenly, the 3 Black & Whites move to one side. 1 ft to more than 10 ft above ground. 5-10 ft above ground. The 3 birds, the 2 Black & Whites, and the Blue & Orange repeat the pattern. The 3 birds, the 2 Black & Whites, the order of the birds which are following the "pattern" changes rapidly and repeatedly. The Whiteheads and the 2 Black & Whites "believe" in the tree, but follow a course of flight almost parallel with that of the Black & White group. Then a Jay joins Black and White group briefly. Then a pair of fittles joins the Black and White group. Stay with it for some time. But then the fittles fly away. Nothing follows them. Then the Black and White group moves back toward us. The Black & White's themselves apparently still in lead. Apparently beyond, or just in front of, the Whitehead tree group. Then the whole assemblage moves down hill and out of sight. The assemblage as a whole was quiet throughout the period of this evocation. Most birds uttered only occasional "CN"s. But the Laf sang briefly while it was with or near flock.

They almost clear now 3:30. Sun low in horizon. No wind. Cold. Everything quiet.

NOTE: For the first time here, I can see summit Purace Volcano. And I find that this area where I am working is really on the NNW slope of the mountain. Must be very close to beginning of east side.

Leaving 5:45 p.m.

May 15, 1965
Region of Purace'

Arrived same place as yesterday 5:28 a.m. Day 5. It is all quite dark. Apparently not much wind. But it is not.

First thrush sounds heard 5:28. Others to be heard later. I wonder how many species there go to sleep at night, especially the young up hill. More bird sounds 5:30 a.m. & to be heard later yet.

Everything dead quiet again 5:32. Then hear first "flocking" sound at 5:33. Then a variety of sounds by different species. Then more "flocking" sound. Mutebent at 5:58. No Myiophobus audible yet.

A single footy Thrush flies by. Silent and alone.

6:01. Several Mutebents singing. Also some warblers. Complete overlap songs of the two species.

35 6:10. See single B. myiophobus (definite) in low small mistle at edge tall forest 1 1/2 - 3 ft up. Hearing "flocking" B.'s and loud "CN" is on - HN. But definitely alone. This site is very close to where I saw the mixed flock including rainbow spinebills and olive, yellow-bellied - black tanagers the other day. Perhaps the myiophobus were avoiding the flock that day?

Sky clearing rapidly 6:18. Sun will soon reach this area.

6:21. Right at edge taller forest see single "flock" 30-40 ft up in tree. Definitely alone. Utters "flock" notes. Flies away.

Starting down hill again 6:28.

85
XII 86
HO 6:33 a.m. See mixed flock. All in tall tree, 15-30 ft up, up region down alpine scrub. Group includes 2 eximias, 1 Black & White, 1 Blue & Orange, 1 White-bellied. All quiet. All apparently looking for insects leaves & bark. The eximias may also be taking mistletoe. One Towhee, 1 group of 4 bellies also supplants —> Black & White. This is certainly as bright,

and unusually colored group as I have ever seen!

A minute later I see single PR Atlapetes 40-50 ft away from the flock. This bird appears to see not join flock.

He is flying along, not being able to determine who is leading. I see single PR Atlapetes 40-50 ft up in bush.

A couple of minutes later, see single PR Atlapetes in tree, somewhat different area. Fly off. But then a single Blue & Orange appears following same route as preceding. But 50 ft behind. Can tell if it is really following the Blue & Orange.

I am going uphill again to see. See obvious lighting and hard by a cloud in the sky.

See a pair of Blue & Orange flying Defunct, alone. Then see another pair, 3 ft up in low scrub, just below where taller forest begins. Single and alone.

Everything very quiet 7:30 a.m. Go down hill.

7:51. Walking along road. See pair of PR Atlapetes in scrub. 3 ft up. Uttering "local" Notes. One is carrying m.m. in bill! This bird hops around the other. Doing some irregular bowing and pivoting. Looking rather unruffled. High phase of bow is "upright" rather than St. The bird being hopped around responds by uttering soft twitter ("Greeting") in high upright posture. Then both fly away. No other species showed any tendency to approach the R's during this performance.

So it would seem that some birds are breeding here now!

8:10 See a single Pseudospingus fly from tree top to tree top, 10-20 ft above ground. Also across road. Uttering PN-type Notes. Looking for a flock to join???

NOTE: This area here is quite close to some edge of forest. The line between Paramo and scrub or forest here is very irregular. There are large patches of Paramo below (probably 200 ft below) highest patches of forest.

8:30. It would appear that very good weather here discourages the formation of mixed flocks as much as very bad weather.

8:35. Several White-tails (Lepidopygia, Yellow-faced) alone. Feeding in trees, 10-20 ft up. Also low and hidden in scrub. Uttering "CN"s.

8:55 a.m. Cloud and wind increasing. Come to region partly burned and extremely varied vegetation. A few trees 20-30 ft tall. Also lots of fairly new-looking second growth vegetation. No typical Alpine scrub. There is a large mixed flock moving thru this area. Its apparent "permanent" members include 1 Black and White, 3 Blue & Orange (2 adults, 1 juv.), 2 PR Attapetes, 1 of the little streaked flycatchers which utters (Alb-like R's — no. LXXXXT) (this species seems to be a regular member mixed flocks), at least one White-bellied flycatcher, and 2 Littles. When first seen, the Black and White was in the lead, followed by Blue & Orange's. All others following these 2 species. But then the Black and White flew across road. No one follows. After this, the Blue & Orange's definitely in lead. And remain so for 10 minutes (approximately). Flock very coherent. All birds close together (1-20 ft apart). Different species in "second place", right behind Blue & Orange's, at different times. At least once, the Whitebellied, at least once, the PR Attapetes, several times, the Litters, at least once, the little streaked flycatcher. Eventually, the Blue & Orange Savagers also cross road. Perhaps rejoining the Black and White, which may have been moving along parallel to the rest of the flock.

97 I caught one brief glimpse of a *Synallaxis* with flock. Quite probably the usual rufous species. But I don't know whether it remained with the flock for a

101 Long time or not. A pair of Forster's joined ———→ group. But they disa-
ppeared almost immediately. Instantly did not continue following. From sounds
103 alone, I think that there must have been a pair of B. superciliosus toward
the rear of the flock at one time. But I never actually saw the birds.

The Forster's was seen only in scrub. Very low, 1-2 ft above ground.
The Forster's were seen only in trees, 20 ft up. The superciliosus, if present
must have stayed low in scrub. All the other birds ranged 5-20 ft above
ground. The Blue & Orange's averaged higher than all the others, with the possible
exception of the White-headed.

Flock very noisy! Juvs. Blue & Orange did lots of Begging. Hoarse "Zhee
zhee zhee..." Notes, with wing-Q. Forster's sang. The OR's uttered lots of
loud twittering pattern. The presumed superciliosus uttered R's. Every one ut-
tered lots of "CN"s.

Little
WCC

(It has just occurred to me that one of the principal ecological differences
between Lottis and WCC's probably is height of vegetation preferred. Lottis occur in
scrub quite frequently. But the WCC's I have seen, in the western Cordillera, have
been very largely arboreal.)

All the birds in this flock were looking for units on leaves and/or in
bark or on twigs.

104 Just after the flock seems to have joined completely, a group of 4 Black
& Whites appears! Moving rapidly thru trees and scrub. Uttering lots of loud
"CN"s. They follow exactly the same route as the (preceding) mixed flock! And
at the rate they are going, they should catch up with it very soon.

Certainly, the fact that Andean mixed flocks seem to follow fixed rou-
tes (possibly usually at approximately the same time each day) must greatly facilitate
all birds coming together.

9:55 a.m. Going back along road. Come across another mixed flock. In four-
 but very thick scrub right at edge road. Group includes 2 Black & Whites, 1 PR
 112 Atlapetes, & B. nigriventris, all 2-4 ft above ground. Black & Whites in lead
B. nigriventris at rear, definitely following repeatedly. All birds quiet. Only
 occasional CN's. Black & Whites fly across road. Start to move in opposite
 direction, back the way they came. The PR does not cross the road immediately,
 but it does turn around and follow a course parallel to that of the Black & Whi-
 tes. In the course of this doubling back, PR \rightarrow nigriventris. But then
 it goes right on past them. Eventually, it screws up its courage and flies across
 road, presumably to join Black & Whites. The nigriventris apparently do not
 follow.

Leaving 10:20 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

May 16, 1965
 Region of Pánuco

Going to work in first area visited here (the area where there is a great
 variety of Diglossini and hummingbirds). Arrive 5:38 a.m. Just starting
 to get light. Cloudy. Not too cold.

Thrush and Andean Sparrow noises as usual.

Seeing this area once again, after working in the other area, I am
 struck by the differences between the vegetation of the two areas. In this
 place, ^{almost} everything (except the forest uphill) obviously is second growth. No
 trace real alpine scrub. This area could be described, in one sentence, as a
 whole series of patches of second growth, of very different size and character.

64 In some places very low, in some places is cladding small trees, scattered among patches of scrub, with only occasional single mature trees (perhaps only small to medium forest) at wide but irregular intervals.

SEE TODAY'S NOTES ON MIXED C. & S. INI.

65 6:44 See single Firebelly alone In low trees scattered scrub. 4 ft up. Fairly noisy.

Rain suddenly pours down 6:45. Too hard to work for the time being. However, see single Sooty Thrush fly by alone. Also see pair White-bellies alone In isolated patch scrub. 6 ft up. Fairly noisy.

Rain getting much lighter 6:52. Going to try to work again.

In fact, rain stops completely within a couple of minutes. A sudden outburst of bird sounds right after rain.

66 67 114 115 Going along road. See pair Yellow-bellies in second biggest scrub by road. 6 ft up. Then, only 20 ft away, see 1 Yellow-belly and 1 Firebelly, only 1 ft apart from one another, same level, same patch of scrub. The Yellow-belly and Firebelly completely ignore one another. Then Firebelly flies down into lower scrub. Disappears from view. Yellow-belly remains behind.

See some more Sooty Thrushes alone

116 Some minutes later, over about 100 yds away, see 2 Firebellies and at least 2 Yellow-bellies flying from tree to tree together. Undoubtedly saw birds seen together earlier. Two Firebellies f ———> Yellow-bellies. Quite clearly conscious, purposeful following.

117 118 See single Sooty Thrush going from isolated bush to isolated bush in pasture slightly uphill from road. It is repeatedly (at least 4 times) swooped at by a Cinnamon Hummingbird! Perhaps the Cinnamons dislike anything the

is black or blackish?? (They seem to ignore the other songbirds, such as tanagers, and Whitestarts around here.)

There really is a huge outburst of activity now! - more than earlier this morning.

Cum See a couple of Cinnamon's chasing one another. Has rain made them (even) more aggressive than usual?

141 8:06. See pair of Firebellies in small tree alone. They are almost certainly same birds seen with Yellowbellies earlier. They are only slightly up hill from where flock seen earlier. But they certainly are no longer associated with the Yellowbellies.

Seen starting to come out 8:10. It is getting warm.
See a single montane cotinga alone. 60 ft up in scrub.
Going up hill 8:13 a.m.

142 Near Dulcinea up hill. (This species seems to be as much a bird of young second growth and/or a commensal of man as any of the Agelaii.)

See a single buffy breasted Agelaius (not same species as in Western Cordillera). Alone. 40 ft up in isolated tree.

143 8:34. See single Firebelly alone. 15 ft up small tree

144 9:45. Single Firebelly flies by alone. Then we apparently, single OR Antapetes only a few inches above ground in blackberry tangle. There also is a single adult Aler in an adjacent tangle about 25 ft away. But the 2 birds seem to pay no attention to one another. Aler flies away in opposite direction

Clouds coming up again. It looks as if more rain is on its way

All birds very quiet. Going down hill again

145 10:20. Get very poor very mixed flock in hedge-like scrub. Apparently includes 1 or more Firebellies, 1 or more Yellowbellies, 1 Ag. There also are

125 W
 a pair of Psittacus in a narrow bush in pasture, and a pair of White be
red flycatcher in a bush in pasture. Both Psittacus
 many by being typical long-plumaged White be red flycatcher. Group disperses
 as soon as I am out of sight.

Leaving 2:40 p.m.

126 See a mixed flock on my way back to Popayan. Area of low
 and almost very young, but quite dense, second growth just above
 127 Purace! 11:00 a.m. 2720m. 8800 ft Group includes at least 2 Atta
 128 petes rufinucha, a couple of Synallaxis (generally gray, with rufous on
 129 up and cap), several flycatchers (some small apparently Peewees - cert
 130 ainly not the species associated with flocks at higher altitudes), and one
 131 Atta. Probably others. Synallaxis and rufinucha very low. 3" to 2' abo
 ve ground. Flycatchers and Atta slightly higher, 2-4 ft above ground.
 All fairly quiet - except for something (juv. rufinucha?) uttering Beg
 ging type "Blue" Notes. Impossible to determine who was following whom.
 I didn't get a good view of the wings of their rufinucha. But
 I shouldn't be surprised if it was the same subspecies seen elsewhere in
 Western and Central Cordilleras.

Incidentally, Colombian rufinucha seem to be birds of lower
 altitudes, on the average, than Ecuadorian members of the same species. Why?
 Do Ecuadorian rufinucha take the place of PL Atta petes in many other parts
 of the Andes. (NOTE: the Ecuadorian form which seems to be most closely
 related to the PL, i.e. leucopterus, seems to be a lower altitude bird than the
 Ecuadorian rufinucha.)

Why don't PL's occur here ??? Is their place taken by the Bla
 ck and Whites ??? I rather think so.

Going to work near town this afternoon. Arrive around place 3:30 p.m. Raining. But it looks as if rain may get pass. Going to try to work.
Rain stopped by 3:40.

See single Thryothorus alone. Sooty gray. Dark bill and eye ring. 1-16. Also legs. Seems to be lighter toward rear underparts. Is this Pale-bellied? 1-16. 3:40.

See single Tangara cayana - ruficapilla alone. Perched exposed top tree 30 ft up.

Unfortunately, there is a hawk around here. Making all the small birds hide. (Certainly, none of them shows any tendency to mob.)

There are a number of hummingbirds feeding on Guava flowers 4:05. Unfortunately too far away to identify.

See a single cayana - ruficapilla ("CYR") in top bare tree. Alone. Joined by pair BT's. Can't tell if joining is intentional or not. All fly off together.

Then see pair BT's in trees alone. Also single CYR in another tree alone. Then see pair BT's and 1 CYR together in third tree. CYR flies off. BT's do not follow.

4:20 p.m. Hear what sound like Alcedo R's. In single new trees and scrub along trees. Then catch glimpses of bird which might have uttered the sounds. Apparently fairly light in color. Might be verreauxi or flycatcher. Yes! It seems to be some type of black-headed tody-type flycatcher. Alone.

4:40. See group 3 CYR's alone. Top tree. 25 ft up.

It is beginning to look as if the BQ's are not permanent residents of this area!

5:03. Starting to rain. Go along path to scrub edge larger river

Get (the same stuff) in same bird - looks (in silhouette) and sounds like Juan. *PR*

Leaving 2:15 PM

May 17, 1905
Region of Panaro

147 Arrive same place as yesterday morning 8:43 AM. Getting light. Sky half clear, half cloudy. Looks as if there might be rain later on.

6:21 See single Yellow-faced Whitestart alone 4 ft up in scrub

6:31 See single Sooty Thrush alone 3 ft up in scrub

Going up hill 6:45 See another single Sooty Thrush alone. Top of all tree. Then see another, in flight. And then a couple more single Sooty Thrushes alone

71 7:30 See pair Yellow-faced Whitestarts alone. Feeding low in scrub and high in trees. Defecating alone. One individual sings occasionally

73 Then in scrub finch-like, running thru tree-tops, 15-25 ft up. Noisy but definitely alone

83 7:57 See 3 *Ammodramus* fly by alone

Wind is getting stronger and stronger. And it is bitterly cold!

8:30 Down by road See 4 more Sooty Thrushes alone

133 Also see mixed flock in scrub by road. Group includes at least 1 finch-like, 2 PR *Atlapetes*, 1 Lef, and (apparently) 1 Andean Sparrow. Finch-like in lead at front. Followed by PR's. Lef repeatedly f ———> PR. All three species 4-10 ft up in scrub. Andean Sparrow also appears to follow ———> PR's repeatedly. But it is at a much lower level in scrub. 6" - 1' ab

one ground. All birds quiet. Then Arrebol flies away to ... of ... approx
or maybe 30 ft away. Nothing follows

Leaving this area 8:45 a.m.

Arrive area where rufinucha seen yesterday 9:15

Then I can vaguely see display flight. Then see another
apparent I can display flight. Then see what looks like Atter display flight
with Twitter about 30 yds away

9:22. See single Looby Thrush alone

139 Slightly uphill, see pair of Yellow-faced Whitestarts. Moving along
g hedge-like row shrubbery & small trees. 4-10 ft up. Quiet, but uttering
occasional "CP"s. They are followed, at least for a few seconds, by 1 or (more
probably) 2 CC's. One CC utters rapid formless Twitter (possibly "greeting")

141 Otherwise CC(s) silent. Then CC's seem to disappear. A second later, an
142 Atter joins ———→ Whitestarts. Silent. Both CC(s) and Atter ranging
143 6-12 ft up. Then 2 rufinucha j ———→ group. Silent. 3-12 ft up
Then Whitestarts fly on up hill. Atter f ———→ Whitestart. rufinucha
/ ———→ group

144 So CC and Atter territories overlap here too.

The rufinuchas here have white spots on wings (Perhaps gugar
common is characteristic of this whole subspecies?).

Wind is not too strong here. And sun is trying to come out
now 9:40. It is fairly warm.

Lots of Looby Thrushes alone here!

9:54 See a single cyanocephala alone. Feeding low scrub, 2 ft
above ground.

10:04. Another area Large expanse medium height second gro

with 2-3 birds cyanocephalus fly by alone. Probably same individual seen earlier. Uttering "CN" & "PN"s. Then we saw bird again a few minutes later still alone.

Cyanocephalus alone 2.25

Leaving 2.30 a.m.

COMMENT. There is no doubt that there are fewer mixed flocks in the area where I worked first today, i.e. the high altitude area with abundant second growth vegetation, than in the other area where I worked on previous days, i.e. the high altitude area which has more or less "natural" and "mature" looking "alpine scrub". I would like to believe that this difference is due to the fact that the vegetation of the former area is more "open" than that of the latter.

Arrive place near Popayan itself, on road to Pácora, 3:30 p.m.
Path of forest. Doesn't look very natural. No! Won't do.

Arrive another area 4:00 p.m. Edge of same big river visited yesterday. It is the Cauca! But this area is approximately 1 mile from area visited yesterday. Includes a variety of second growth vegetation, including trees, both along river and along ridges 5925 ft 1760 m.

It is sunny and hot now.

418 See several hummingbirds which may be Scans feeding on flowers of Guava. No! At least one of them is not Scan. About same size, bill fairly long; slightly decurved (downward), purple chin, throat, and whole center breast and belly, head and sides breast & belly green. Another species Coldre?? Actually, there are a number of different species of hummingbirds feeding in the Guavas by river here.

4:15. See single CYR alone in tree-tops

Also see a number of PT's fly by alone.

Then see what looks and sounds like Scrub display flight.

4:23. See pair PST's in tree, 18 ft up. They move on. Then a new fly into same tree. Apparently not following PST's.

Lots of different flycatchers around here. Also 1 Parula Warbler (presumably Tropical). The Parula is uttering R's.

4:36. See ♀ or juv. Raphiochlamys flammeozona (both orange and yellow underneath). Alone. Edge scrub & pasture, 3 ft up.

5:20. See single tanager, probably a Pyraeidea rubripes I have never seen before (no. LXXXXII), 3 ft up, isolated patch scrub, edge of forest.

Leaving 5:25 pm

COMMENT: It probably is significant that the presumed Pyraeidea was alone. Blue & buffy, or blue & chestnut coloration is much less common or widespread here than in the Southern Andes. The "functional" equivalent of blue & buffy here, and probably throughout much of the Northern Andes is blue & yellow (see the Yellowbelly, Dabuna, the Butter aupis species, Comptosia, and cyanocephala - in some areas).

NOTE: The cyanocephala here may illustrate the same general principle cited above. They may be less gregarious here than in many other parts of the Northern Andes. Thus explaining why they were not in the Quito region.

May 18, 1965
Region of Puzac

Going to work in ruspincha area again this morning. Arrive

5:45 am. Very clear. Warm. Breezy light

lots of birds in air. Lots of hummingbirds. Also *Arremonops* singing.

lots of groups of birds flying around alone.

6:00 am. Not yet to see the *Arremonops* that is singing. Apparently perched low in some small tree. But certainly alone.

6:07 am. See mixed flock in "bridge" near close to where *Whitethroats* are. *rufinucha* - CC - plus flock seen yesterday. Apparently partly same flock. Now includes at least 2 *rufinucha* and 1 CC. CC silent. Feeding on insects on leaves. *rufinucha*s occasionally moving. "Twitter" and R's, apparently as "question" CC perching when group not in movement. CC 5-10 ft up. *rufinucha*s 5-8 ft up. At least twice, CC f ——— *rufinucha*s.

Everything, except the leaves, very quiet and calm 6:40 am

6:50. Another area. Low thick scrub by road. Come across at least 2 more *rufinucha*s. One uttering "Zlice" Notes. Begging? These presumably are the fruit birds seen in this area, a couple of days ago. Certainly not seen yesterday or earlier this morning. There are other birds not far off in same patch of scrub (including 1 "Pawee"). But I can't tell if they are really associated with the *rufinucha*s or not.

More footy Thrushes alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Still more footy Thrushes alone. In very low scrub 8:30 am

9:07 am. Region of very low thick scrub near road. See single *rufinucha* apparently alone. Only a few inches above ground. Uttering "Zlice" Notes constantly. Then a single CC flies in! Lands about 10 ft away from the *rufinucha*s 2 ft up in bush. Silent. Then flies on *rufinucha*s do not follow.

It seems very unlikely that both the CC and the rufinucha were the same individuals seen anouating earlier. This is almost 1/4 mile away from where anouation seen earlier. I.E. it is beginning to look as if CC's here have a special inter-specific preference for rufinuchas!

I wonder if this is partly due to the fact that the rufinuchas here have a white "speculum" on wings — just like CC's ???

See a single Ater alone in distance.

9:36. See a single cyanocephala alone. Very near where bird seen yesterday. Presumably same individual.

Clouds coming up now.

See single fermaria quite low in scrub. A pewee-like flycatcher about 10 ft away. Possibly anouating with one another.

Arrive same place as yesterday 3:07 p.m. Sunny and warm.

There all sorts of hummingbirds all over the place here.

3:18 p.m. See single taeuzer LXXXXII here. Alone 15 ft up in jun no tree.

See single CYR fly by alone. Then 2 more. Also alone.

See same LXXXXII fly by alone.

Clouds coming up now 3:30 p.m.

Then see single PST going from tree top to tree top. Alone 20-30 ft up. Apparently silent.

3:45. See single Red-breasted Blackbird in single, low, isolated scrub in center pasture. Then see single adult Tangara hainaei, 4 ft up, in tall hedge-like scrub. Both birds quite alone.

This area is reminiscent of Chonos de Milla — except for the absence of Diglossini!

3:30 pm. Alone as usual. Identification quite definite. Does not display. Flies in 10 ft up, 10 ft up, utters "long" of "chuk" notes. So the supposed "long" note is the other area near Papayan a few days ago probably were with them.

4:21 See constant. He was alone, 6 ft up small tree in hedge-like scrub.

Leaving 4:35 pm

May 19, 1965
Region of Puma

Came same place as yesterday morning 5:20 am. Still quite dark. Sky half cloudy.

Lots of Sooty Thrushes alone as usual!

72 6:19. See single Phaethon aureo-ventris ("Black & Yellow Green back") silent and alone 6 ft up in bush, area low thick scrub.

73 6:32. Single Blue & Black (nanus) flies by. Uttering "PN"s. Definitely alone. Lands in small tree, 6 ft up, border scrub and pasture.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

74 8:30 am. Weather turned fine and warm. Region where CC - surface. A flock seen earlier. Group of 3 cyanocephalus fly from tree-top to tree top in "hedge" 10-15 ft up. Definitely alone. Utter a couple of twitters as "quieting" so there are at least 3, and almost certainly 4, individuals of this species in the immediate area.

Came first place where I worked at level of Papayan (scrub along small stream) 3:05 pm. Sunny and warm.

See single BT alone 20 ft up in tree. Also single Pale-vented Thrush alone. 15 ft up in scrub. Then see single Pale Tanager alone 30 ft up, top tall bare tree. Then see single CYR in low scrub. There also are a lot of birds in scrub near CYR. Including at least 2 species flycatchers. But I can't tell if they are really associated with CYR or not.

Rain starting 3:27 p.m. More or less stopped 3:40 p.m. Then starts again. Stops again.

With each beginning of rain, there is a sudden outburst of bird noise. But nothing I recognize very well. Probably large flycatchers.

3:50. See some more BT's alone.

See single "Pale-vented Thrush" 25 ft up in tree. Then see pair PS T's flying from tree to tree, 15-20 ft up. Both species alone.

4:20. Scrub along little side-stream. Hear what seems to be Pyrrhuloxia singing.

BB BQ's certainly do not seem to be permanent residents in this particular area!

Leaving 4:30 p.m.

May 20, 1965
Region of Purace

Arrive the highest area (alpine scrub) where I have worked before 3:22 a.m. Sky partly cloudy. Still quite dark. Looks as if fog may come in.

Everything very quiet 5:30 a.m. Quite unlike rufinucha area yesterday morning same time!

A few bird sounds 5:34 a.m. Psaltriparus? Then quiet again.

143 *Vireo* members in group 2 Yellow-faced Whitestarts, 2 Setters, 1 Blue & Orange, 1 Whitehead, 1 ~~XXXX~~ Flycatcher, Brown Creeper, 2 Kinglets - the group also includes at least 1 Towhee and 2 B. nigrocrinitus. Group is small, ranging 2-8 ft up. The Towhee and *nigrocrinitus* stay in low scrub. Flycatcher and Whitestarts flycatching as usual. Setters pulling down to off leaves. Most of group quiet. One CW's. Towhee uttered 1 'Da-uh' type long phrase. *nigrocrinitus* uttered lots of R's. Group fairly coherent. All birds 1-10 ft apart. Most of the time, it obviously had no leaders. And no species showed any particular tendency to follow any other. Eventually, under these circumstances, the group was stationary for a long time (at least 10 minutes). Eventually, it drifted slowly down hill. I can't tell of any species in particular was leading this downward movement. Just possibly, it may have been the Blue & Orange.

Rather surprisingly, there was some overt hostility within this flock. I believe that this is the first flock within the region in which I have seen such hostility. Once one fetti chased the other. This chase apparently accompanied by soft but long R. And once, one fetti chased and successfully attacked another bird of another species. Apparently a small flycatcher. This chase and attack silent.

This behavior of fettis is really quite remarkable!

Am trying to come out 7:45.

see single Laf alone. 4 ft up tree in alpine scrub. Silent

More Sooty Thrushes alone

104 A single *Forficula* flies by alone. 7:59. Then see single *Haf* silent and alone.

Several Larks singing quite energetically 8:04. White-throats select
See Green VIII. Hummingbird feeding on dark red cup shaped flowers.

104 I am going to see the Lake & Lake like name. Everything very quiet
for a long time as usual. I am here, where there are birds, at different sites
and still more birds in the air.

105 Do you see anything with you? I am
in the air of the air. I am here about 9:30

Everything is quite wonderful. I am here now. Rather surprising. It
is lovely and cool, with some wind, but not very cold or windy.

Obs! 9:05 Fog coming in (Can the birds here "anticipate" fog and
wind? I rather think so.)

106 See more *Synchiya* also (not *synchiya* species)

Fog comes from the north. They must be to come out again. Now there
are a few more birds in the air.

Going down hill again

Leaving 9:30 a.m.

COMMENT: A thought has just occurred to me. Perhaps
the fact that the birds in mixed flocks here (and elsewhere in the north
ern Andes) are much more variously colored, on the whole, than the bi
rds in mixed flocks in Bolivia is evidence that the fauna of the Northern
Andes is younger than that of the Southern Andes? ??

May 21, 1905
Punau - Tijeras

Going much further along road from Punau to Tijeras and Huma.
Road now going down the other side of the mountain (other side from where I have
worked before). This is the eastern side, but it also would appear to be the western

Obviously, the natural vegetation of this area is now low forest. How
ever like Hummingbird. But a great deal of it has been cut down in
many areas. There is lots of bamboo thicket around in spots.

Weather today quite good. Little cloud.

Stop one area mixed forest and scrub 9500 ft, 3:13 a.m. Lots of
 noises. Much more than higher up mountain.

Stop another area 2823 m, 9225 ft. Low low scrub. Also forest
 near by 5:35 a.m.

Not as much bird noise as at first place we stopped. But hear some-
 thing that sounds like Yellow-faced Whitestart song. Nothing else audible at this
 time.

See single hoop Hummingbird alone. 2 ft up violet scrub in pasture-
 marsh. Then see another, also alone, in similar scrub.

Then hear lots more Whitestarts singing 6:05 a.m. They hear what
 might be Whitestarts alternating with Cy edge may be forest.

6:15 a.m. See mixed flock. Includes 2 B. luteoviridis (very Base
Glenn - like in shape - broad yellow supercilioses) and at least 3 Pseud
ospingus. Possibly others. Moving them very mixed but not very high near
 growth scrub, between marsh-pasture and forest. All birds very, very
noisy; lots of "CN"s, "PN"s, R's, "flourishes", "utters", what have you.
luteoviridis definitely in lead. Pseudospingus follow repeatedly. luteovir
idis ranging 2-5 ft up. Pseudospingus 4-20 ft up. All apparently look-
 ing for insects on leaves and twigs.

I first saw group when Pseudospingus flew into small tree
 in which Whitestart was singing. This can be clasped as a joining reaction.
 But the Whitestart immediately shut up, and flew away, into a tree 25 ft

away as soon as the Pseudospingus approached. I & E. Whittarcts may be re-
lent to join back when a singing mood. But then, about 2 minutes later,
a, Whittarct singing. Pseudospingus, 20 ft up in tree. Whittarct
does not sing while with group. Or at least not when very close to
other birds. Now I see that there is a pair of Whittarcts with group. Definite
by yellow-faced. One or two white, one or both Whittarcts makes a short
excursion, to other trees 20-30 ft away from group. One or both
Whittarcts do (pp) tend to sing while away on these excursions.

7 A pair of rusty-throated joins group. But only very briefly. And
I think only because they want to "mob" me.

Now the Pseudospingus seem to be in lead. In any case, it is obvious
that they form the "real" nucleus of group. By far the most conspicuous
members of the group. But group as a whole is slightly less noisy now, 6:30,
than earlier.

It is clouding up rapidly now.

July 10

A single Sitta j. —————> Pseudospingus in tree 15 ft up.
Sitta is silent. Then single Yellow-belly j. —————> Pseudospingus - Sitta
Also silent. And it immediately flies down into lower scrub.
Group goes out of sight 6:40 a.m.

Then catch up with part of it a few minutes later. In low second
growth scrub interrupted by patch of pasture marsh. This bunch of birds
includes 2 or (more probably) 3 luteoviridis. Certainly the same individuals
I have seen earlier (I have been able to hear them continuously). 3-4 up. Also

WJ

1 Cy, only 1 ft from the warblers. Feeding on red berries. Then the Cy flies
to a bush a couple of feet away. Perches 4-5 ft up. Sings repeatedly. All
song phrases perfectly typical of the species in this region. Cy doesn't seem to

mind that the Luteovirides are moving about very much in the forest.
 The Luteovirides continue to vocalize while Cy sings. They are
 not quite as noisy as they sometimes are. Then the Luteovirides stand
 move from bush to bush. Usually 2-4 ft up. Still noisy. It
 is that there are at least 3 or 4 birds of different species following the
encodes. All staying low in scrub, and remaining silent. One of the be-
 12 nds is Blue & Orange. Apparently single. This Blue & Orange f -
Luteovirides repeatedly. Most of the other birds are unidentifiable, but I
 think that 2 may be Atlapetes. Cy also f -> Luteovirides Cy
 continues to sing occasionally while with group.

At this point, 6:50, rain starts, and quickly becomes heavy.
 This last bunch of birds, Luteovirides - Cy - Blue & Orange, etc.,
 appeared to have become quite separate from the Pseudospingus - felle -
 Whitestart - Yellow-belly bunch. The "Luteovirides bunch" apparently
 more characteristic of low scrub than the Pseudospingus bunch. Obviously
 both Luteovirides and Pseudospingus are panmix nuclear here. And they are
 nuclear to different sub-groups, which sometimes merge and sometimes keep
 apart. Obviously allo-gregariousness must be highly developed in this area
 (viz at least 2 panmix nuclear species in same place - in contrast with
 some other parts of the Andes)

It is remarkable to find 2 "stratified" sub-groups in an environ-
 ment like this. Presumably the "higher" group also is characteristic of adja-
 cent forest or forest edge.

It also is remarkable to find Cy with "lower" group.

Rain stopping 7:15 a.m. Going to look at other areas.

7:23. See single bird which may be Hemipungus superciliosus

storm now

23 Near repetition which may be Yellow faced Whitestart song 10:01. Then
24 see single Agelaius-type 30 ft up in tall tree. Apparently singing sp. 21 in Then
25 Deliquis. Then see two birds in tree 15 ft away. Apparently Agelaius sp. 21
except that one, at least, seems to be blue instead of brown. Then sp. 21 deliquis
Then all 3 birds fly off. The two sp. 21 appear to go in different directions.
26 Then a pair of negro-virens appears, flying in one of the same trees. Then sp. 21
This may be part of a diffuse mixed flock.

Rain again 10:10

Leaving 10:20 a.m.

10:45. Region of shrub, dense mixed forest and scrub. 9050 ft. What
appears to be single Atlapetes torquatus flies across road. Utters "secret" notes in
flight. Loud. Then plunges into low scrub. Immediately, a Yellow-faced White
throat flies into tree just above scrub. Coming from opposite direction. Obviously a
joining attempt. But torquatus is now invisible and inaudible. White throat flies
away.

Then Deliquis singing in distance

31 Then see Laf singing typical songs, 10 ft in tangle of vines grow-
ing up along trunk tall mature tree, presumably remnant of original forest.
Feeding on cup-shaped pink flowers. This vegetation is relatively thick
and dense, and there are more tall mature trees around than in any other
area in which I have ever seen Laf. Then a single PL Atlapetes (definite)
appears in same tangle of vines. Pairs within a couple of ft of Laf,
after the latter has stopped singing. No obvious reaction between the two
birds.

Obviously, I am on the fringes of a mixed flock!

Then I go approximately 20 ft up road see a single Yellow-faced Whitestart - a group of vines with pink flowers, the same species on which Laf was feeding. Whitestart sings a number of phrases. Then Laf starts up. Laf - Whitestart. Then a single Yellow-belly joins - group. All three birds settling about in trees and vines 15-25 ft up. Larce, 1. Whitestart follows - Laf! Then Laf sings, while Whitestart is only 1-2 ft away. Then Whitestart starts to chase Laf. Repeatedly! Obviously hostile. Some chases may include bodily contacts. Laf sings again between and after chases!

Then a whole man of birds appears in exactly same area. One PL Attapetes; 2 or 3 more Yellow-bellies; another Yellow-faced Whitestart; 1 or 2 Puffy Flycatchers (LXXXVII - same species as in Thu mague); 2 Blue & Black Tanager; at least 1 Lette; and at least 2 Basileuterus and/or Hemispingus types, which I can not see well enough to identify. Also at least 1 Flycatcher LXXXXI. Probably others.

All these birds may be said to have joined - Laf - Whitestart - Yellow-belly group.

For a short while, the Yellow-faced Whitestart seems to be the leader of the group.

All the birds except the Basileuterus and/or Hemispingus types are ranging 5-25 ft up in a great variety of vegetation. The Basileuterus and/or Hemispingus types, by contrast, are staying very low in scrub, probably ranging from only a few inches to 3 ft above ground. They also are staying well under cover.

Most of the birds seem to be looking for insects. Flycatchers and Whitestarts flycatching. But the two Blue & Blacks and the Yellow-bellies

lles, at least, are spending all or most of their time eating for to. Especially small greenish berry-like fruits.

Eventually, Whitestart stops chasing Laf. Laf stops singing. So
 no records later, Whitestart sings some more. Then shuts up.

Group now moving thru extremely varied scrub edge road. In all trees, large bushes, and some bamboo. Rather surprisingly, the Laf continues to accompany the group for some appreciable distance. Laf quite silent now.

Then I see that one Whitestart is chasing and attacking the other. Chases with "CN"s and/or "SHN"s but no song. I presume that the aggressor is the same one who chased Laf earlier. It is interesting that both cases of inter-specific hostility seen in mixed flocks in this region have been closely associated with intra-specific hostility (viz. the fights seen yesterday or the day before).

Now group flies across road. Bailesterus and/or Hemiprocne types definitely in lead. Everything else can be said to be following, and following repeatedly. I can't see much of the order of precedence crossing the road. But certainly the PL, the Whitestarts and the Yellow-bellies do not come immediately after the Bailesterus and/or Hemiprocne types.

44
 Then Ag joins → group. Sings repeatedly, perched 10 ft up in small tree. Laf and Whitestart silent at the time. (There certainly have been absolutely no overlaps Whitestart and/or Diglossini songs at any time in this flock.)

As far as I can tell, there are no particularly close associations between any two species within this flock. Certainly the Diglossini are not associating with one another.

Group gradually makes its way up hill. Through very mixed vegetation, including all sorts of forest (except alpine) and mature trees. All birds apparently ranging from approximately same elevations above ground as earlier. Incidentally, the group as a whole has been moving through forest — many other species uttering a variety of vocalizations in addition to the Whistled note. Tsp, and Gg.

As group gets further away, I see that Yellow-bellies and White-throats are lagging behind. Now bringing up the rear guard. And now there does seem to be a particularly close association between these two species. Each repeatedly joins and follows the other!

Group finally disappears.

I wonder why there are no GT's here. The environment seems ideal for them. Perhaps GT's don't reach such high elevations except in places like Murchiqui, where area of high elevation is very limited.

Leaving 11:45 a.m.

COMMENTS:

I. I think we may assume that PL Atlapetes is more or less strictly confined to areas of extreme humidity at high elevations. Unlike the PR, which seems to occur in both extreme, and moderately humid environments at similar elevations. The presence of Yellow-bellies may also be an indication of extreme humidity. This may help me to interpret conditions in other areas.

(Note. The Fordiella may be largely confined to situations of only moderate humidity in the northern Andes — but this is not necessarily true in the southern Andes.)

II. It would appear that mixed flocks are really very common.

on in this region as a whole. Possibly slightly less common than in the Munchique region as a whole. But flocks do seem to be more common around 7000 ft here than at the same elevation on Munchique. (This comparison may not be entirely fair, however, in view of the small extent of high altitude areas on Munchique.)

It might be added, in this connection, that the frequency of mixed flocks here is matched by the frequency of mixed flocks seen at lower elevations in the northern part of the Central Cordillera a couple of years ago. Extreme Allo-gregariousness would appear to be characteristic of the Central Cordillera as a whole !!!

How does this help me with my various hypotheses?

The development of mixed flocks might be positively correlated with any one or all of a great variety of factors.

- (1). Number of species in region.
- (2). Age of region.
- (3). Humidity of region — and density of vegetation.
- (4). Isolation of region.
- (5). Size of region — and relative extent of frontiers.
- (6). Accessibility of region to invasion from outside, by "island-hopping".

Possibility (1) may be discounted. Because flocks are common in Bolivia, although the number of species there is only half of what it is in any one of the three cordilleras of Colombia.

Possibility (2) may be discounted because there is no continuous trend in the development of mixed flocks from South to North throughout the Andes. (The trend is "reversed" in the middle. No

ally and south are similar, more or less, but the center is quite different.

The highly developed flocks were so highly developed in the areas visited today would tend to support (3). But humidity cannot be the whole answer. Mixed flocks seem to be highly developed in the northern part of the Central Cordillera, which does not seem to be very humid. And they do not seem to be highly developed in the Palca region of central Peru or the Machu Picchu region of southern Peru, both of which do seem to be very humid.

No (4) must have some effect (my Chiriqui?). But again it cannot be the whole answer. The Central Cordillera is not isolated.

This leaves us with (5) and (6). No. (5) must have some validity (my the frequency of mixed flocks in southern Andes). But (6) must also be important. As mentioned in my notes on flocks of the Western Cordillera (p. 13), this would seem to be the only way to explain why mixed flocks are approximately as highly developed in the Central Cordillera as in the Western.

May 22, 1965
Tijeras

Going to work in area where Aquornis - Pipreola - Tangara nigro-viridis group seen yesterday. Arrive 5:30 a.m. Just getting light. At. Cloudy. Altitude, according to my instruments now, is 8500 ft, 2595 m. Quite a lot of bird sound. Probably mostly thrush song. Then a greater variety of sounds 5:40 a.m. Nothing I recognize.
5:45 a.m. See single Yellow belly. Perched exposed 20 ft up on bare tree.

male projecting above scrub. Definitely alone. Sing repeatedly. I can hear faint overlap from Yellow-faced Whitestart in same neighborhood. I can hear not then in single Sooty Thrush alone.

Everything quiet 6:05 a.m. Then Whitestarts begin singing again. Birds on general seem to be surprisingly scarce here. Where I am walking now is obviously young second growth scrub, but it is quite dense. There is pasture on 3 sides of scrub, but it is connected to forest on far side. And there is lots of other forest beyond pastures. There don't seem to be many flowers around. But there are some hummingbirds.

48 6:44 Come across mixed flock - of sorts. Whitestarts in trees, 15-30 ft up. One singing quite frequently. And I can hear a lot of other birds in scrub below them. It sounds as if there may be Antpeters, Yellow-belly (us), and even a Pyrrhuloxia. But all quite invisible.

More single Sooty Thrushes alone.

49 6:55. Get good view of another mixed flock. Includes 2 Yellow-face Whitestarts, 2 Cys, 3 adult Blue & Blacks and 1 juv. Blue & Black. In young second growth along side of road. The 3 adult Blue & Blacks definitely in lead. Followed by the Cys and the Whitestarts (which alternate second and third places). Followed by juv. Blue & Black. Blue & Blacks quiet, uttering only "CN"s and/or "PN"s.

Both Cys and Whitestarts very noisy, however. Both sing typical song phrases repeatedly. They alternate bursts of song without overlap at least 15 times!!! Also sing at least 3 or 4 times with partial overlaps. And once with complete overlap. Short (but probably not all) overlaps occur because Whitestart begins to sing when Cy is in middle of phrase.

Once, one Whitestart repeatedly chases and supplants Cy! This does

is silent. It is beginning to look as if Whitestarts have a special value - spec-
(X^m) for evidence for ... But perhaps the Englemans are the only birds in
mixed flock, which is small enough for Whitestarts to attack safely?

53 ... group. They seem
to be as ... as the other birds - but they definitely stay with
group for some minutes at least

Whitestarts range 1-15 ft up. Flycatching up range 2-8 ft up.
Eating small green fruits at least part of time. Blue & Blacks range 1-4 ft up.
Thrushes range 3-10 ft.

Members of group stay close together. Usually only 5-10 ft apart.
But group is not progressing very rapidly.

Go down road a little. Find another mixed flock. 3 Yellow-
faced Whitestarts and 1 adult Blue & Black. Blue & Black quiet, low in
scrub. Whitestart(s) sing(s) occasionally. Ranging from low in scrub to 10
ft up in small tree.

It looks as if Blue & Blacks may be passive nuclear here (too).

Another single Sooty Thrush alone 7:35 a.m.

Go walking along edge forest ca. 8300 ft. Then along path in forest.
Quite a lot of bird noise but nothing visible (yet). Little glimpses of a few thr-
ups in dense scrub. Unidentifiable.

54 8:45. See 2 adult Blue & Blacks (not together) fly from low scrub
b into tall trees 20-40 ft up edge forest. Uttering "Heet" notes. Then I hear
55 Whitestart song in same general clump trees. Is Whitestart attractive to
Blue & Blacks ??? (This may be partly the same as one of the groups seen earlier
this morning.)

8:50 Along road. See single Yellow-belly, apparently alone, 1 ft

up in isolated clump form! Then we saw Sooty Thrush in. with 10-15
away. Both birds about 10-15 ft. away. Yellow-bellied into small
tree. Then another Yellow-bellied, flew into the 20 ft away. Both 10-13 ft. away. Both
quiet. Probably feeding on fruit.

Light rain starting 9:00 a.m.

See single Sooty Thrush alone

Leaving 9:15 a.m.

Arrive area where last big mixed flock seen yesterday, 9050 ft., 27
50 m. Cloudy. But not raining. Just below fog level. 9:20 a.m.

Single Sooty Thrush flew by alone. Then another. Then

9:45 a.m. See big mixed flock. Certainly, partly the same flock as yesterday!

Going in exactly same direction, on an exactly parallel course, just 50 yds
away (I paced off the distance!). (And note that the flock is appearing at almost
at exactly same time.) The course today takes the flock thru vegetation which is
lower, on the average, than that of the course yesterday. Lots of small young trees

lumber and small trees and climbing bamboo. Group today includes 1 ♂

Albi (definite!), 2 small brown ones, at least 4 Blue & Black's (apparent

ly 2 pairs — 2 groups of 2 individuals not associating with one another), 2

Pygmy Atlapetes, at least 2 (probably 3 or 4) Yellow-bellies, a large tree creeper,

2 Psittacus nigripinnatus (definite), at least 1 (probably more) Howler

monstrum atropurpureus, also 1 Myiarchus luteiventris (heard but not seen). Possibly

others. Certainly no White-throats, Taf, or Cy!

Flock as a whole was quiet. Only exception was H. atropurpureus. This
bird uttered lots of Begging type Notes. Juvenile?

Leadership of group changed repeatedly. When first seen, Albi was

in lead. Later on, Green-Backed Boobies, P.L.'s, and Yellow-bellies in lead. The Bank Swallows and House Wrens were never in lead.

Also The W. Gnatcatcher disappeared after a few minutes. Probably left flock. All the other birds stayed. They were all moving rapidly.

The W. Gnatcatcher showed preference for bamboo. Ranging 2-15 ft up. All the others used all kinds of vegetation. Blue & Blacks 2-25 ft up. P.L.'s and Yellow-bellies, 2-35 ft up. The W. Gnatcatcher, Bank Swallows, and wrens ranged 2-15 ft up.

Fog and rain came on 10:10 a.m. and I lost sight of the birds as they go uphill. When they left, 1 pair of Blue & Blacks seemed to be bringing up the rear on ground!

Leaving roughly 10:15 a.m.

COMMENTS:

I. As far as my observations here go, mixed flocks seem to be commoner (and much larger) at higher elevations than at lower elevations. This is very different from the situation on Thomelique, or in the northern part of the Central Cordillera according to my 1962 observations.

Is there any general correlation between types of environment, or region, and relative development of flocks at high and low elevations?

Perhaps the sparsity of mixed flocks at relatively low elevations around Tijeras is due to the fact that the natural vegetation of the area is heavy forest, and the forest seems to have been cut down only very recently, in most areas. There has not been time for much second growth or edge vegetation to develop. Perhaps some of the local species have not had time to become adapted to second growth and edge.

I have not done much work inside the remaining patches of

forest. So the fact that I have not seen mixed flocks inside the forest all the
forests is not necessarily significant. But it should be noted that this
morning, inside the forest ca 8300 ft, bird sounds were to be scattered
throughout fairly evenly. Not absent in some areas, and very few
others, as would be expected if all the birds were gathered in groups.

II. My observations today and yesterday would suggest that there
may be some degree of special preference(s) among Yellow-faced Whistlers,
Yellow-bellies, Blue & Blacks, and Cys. Not surprising, in view of
the color patterns of the species involved. All are blue and/or black above
with yellow below in two cases.

III. Re the sooty Thrushes. It is my impression that they do not
tend to "scatter" flocks, when they do join them, in the same way as the
Panamanian species of Turdus.

IV. The area right above Purace, where Atters and Scars
are common, is 40 Km from Popayan. The area where I first began
work, where Lops, Atters, Cys, and CC's (and Cinnamons and Green
hummingbirds) all occur, is 51 KM from Popayan. The highest alti-
tude area, where Black and Whites occur, is 54.5 KM from Popayan.
The area where the big mixed flock has been seen yesterday and today,
and where the Albi was seen, is 73.5 KM from Popayan. The relative
low-altitude area near Tijeras is 79.5 KM from Popayan.

May 23, 1965
Purace' - Tijeras

Going to work this morning in area where Albi was seen yester

July. June 5 - 2:00. Just starting to get light Rain & fog!

6:00. Lots of Myiophobus flying about alone

6:15. See 2 Myiophobus fly across road into bamboo scrub. There

also an Alcedo in the scrub. Perhaps H. atropurpureus and a flycatcher.

Apparent Myiophobus in trees, foraging already

6:25. See single PR. Atlapetes alone, in very low sparse growth beside road. Flight very few inches above ground. (This is a relatively territorial species, compared with most of the other brightly colored Atlapetes. Not near Alcedo inquis-like. I suppose rather similar to gutturales and cruciger.)

A much later, an enormous flock coming down hill across road from S.E. This group was some 2000 or 3000 birds, mostly Myiophobus and the day before, but going in opposite direction. Group includes 4 or 5 Presops, 93 pusus, at least 1 Blue & Black, at least 2 Yellow-bellies, at least 1 Chemo, 7 Myiophobus, at least 1 PT, at least 1 PR. Atlapetes, 2 Yellow-faced Whitest, 10 ants, at least 2 B. nigrocostatus, 2 Sittas, at least 1 Ruddy Flycatcher, 104 at least 2 or 3 tree creepers (probably all same species - light patch on throats and light supercilium). Almost certainly others. Probably 25-30 birds as a whole. I.E. the flock is fully up to Thunbergia standards.

As far as I could tell, group was not joined by the PR. Atlapetes or any species of Diglossa.

The group as a whole was very arboreal. More so than flocks seen previously in this area. Possibly scrub is too damp today to be comfortable. (Immediately, the rain started to come down hard during the period I was watching the flock, but this did not appear to induce any change in the behavior of the birds.) Birds occasionally entered tall bushes and fairly high patches

is bamboo near, but they were not to be seen, & so were not
mature.

Sittis

The Pseudospingus were the most numerous, with 21 seen. They were
ranging 15-40 ft up. Showed a definite tendency to stick to one or two
level. Flitting about on top, poking down into crown, apparently looking for
insects. Everything else tended to stay slightly under the "cover" of the top
most series of leaves. Sittis ranging 15-30 ft up. Definitely picking insects off
leaves. Yellowbellies and Blue & Black ranging 10-35 ft up. Could not see what
they were feeding on. Tree creepers ranging 10-35 ft up. Flycatching as usual. All or most of the rest
of the birds averaged somewhat lower, probably ranging 8-30 ft up. The
GT was seen only briefly, 25-30 ft up.

All or almost all birds very noisy. Especially Pseudospingus. White-
start(s) sang occasionally. B. nigrocristatus uttered R's

Sittis

Leadership of group apparently changing occasionally. But was usually be-
ing exercised by the more "warbler-like" types. Pseudospingus certainly led a
good part of the time. Led flight down road. But I think the nigrocris-
tatus and the Sittis also led for some seconds or minutes. Yellowbellies usually
near or at rear. P. certainly showed no tendency to lead.

The Yellowbellies and the Blue & Black tended to stay close to one another.
So, probably, did the Sittis and the tree creepers!

One of the Whitestarts chased the others from time to time. Also supplanted
a B. nigrocristatus at least once. Chases & supplants silent. But chase fol-
lowed by songs.

When flock was first seen, it was in area where there was a lot of
bamboo among trees. There seems to have been one, or a small group, of H.

Aug 12th The group also seems to have picked up a fly! I saw ~~one~~ fly over group, across road. No one follows

Until now, it has been raining quite heavily. But now rain stops temporarily. And group shows a tendency to disperse. I lose sight of ~~one~~ one, Br. virentinus and Hemiprocne. Also the Black-capped Finch. The Yell. bellies and Or go uphill, and into mature tree. Ranging 15-30 ft up. Red ch species follows and joins the other repeatedly. Then they also disappear.

The two Whitethroats remain behind. Start to chase one another. One territory, tumbling, aerial fight. Then they fly away in the opposite direction from the rest of the birds.

Flock as a whole was moderately noisy. Ch and a variety of notes. Little or no "song". (Apparently did not sing while with flock.)

Before this flock disappeared it had entered, a hundred yards or so, within the area where I saw earlier big flocks. I.E. the "territories" of different flocks overlap to some extent. More or less like Munclague!

Rain more or less stopped 8:15 a.m. But fog coming (back) in.

Both rain and fog stopped 8:50. There is no more or less wind around.

See lots more sooty thrushes alone.

9:12. See pair of Black-capped Finches definitely alone. Moving thru low scrub & bamboo thicket edge of road. 2-8 ft up. Apparently getting insects off leaves (at least in the bamboo).

9:25. See group of birds uphill. In trees. More or less where second mixed flock disappeared earlier. Can't identify most of the birds (there is a patch of fog up there). But group certainly includes a Yellow-bellies. Then a single fly flies away from group. No one follows. WW

Aug 13th 1958
Fog coming down again 9:35 a.m.

1972

W/11111

A little further along road catch glimpses of what seems to be same group. The yellow bellies. These wings fly up hill, apparently going to join group.

July 9 55am. Flying getting thicker and thicker

REMARKS: I am now coming to the conclusion that mixed flocks are at least as high as they are here as in the Western Cordillera. Note the large number of apparently parasite nuclear species: e.g. the Black and White, the All-colored Spintail, Pseudopygus, E. luteoviridis.

It is becoming obvious however that I must look at the avifauna of the more humid areas of Ecuador and Central Peru in more detail. The road to Santa Rosa and Maraynes!

W/11111 Apparently the WCC is not a regular member of mixed flocks at the altitudes at which I have been working here. Why? Is it confined to lower elevations here? Is it unable to compete with Pseudopygus (a species of similar size, equally arboreal, and probably also largely insectivorous).

Certainly bad weather did not discourage the formation of mixed flocks here this morning (altho it may have discouraged some scrub-inhabiting species, such as the PR Atlapetes and Diglossa spp. from joining the flocks).

It is interesting that I have not seen any Squirrels with flocks in this Cordillera. Why?

In the area worked today, the PL Atlapetes, the Yellow-belly, and (probably) the Blue & Black seem to be the 3 species which range most frequently from high in trees to low in scrub, thus "tying" together the

other largely arboreal or largely semi-arboreal

Aug 24, 1965
Rovani - Japan

Going to work same place as yesterday. Arrive 5:25 a.m.
Heavy fog! Cold! Still quite dark (black in fact)

First bird sounds 5:35. Thrushes and wrens. First *Thraupis*
DC 5:38 Lots of birds doing it. *Paruliculus*-type R's and floweries 5:42
First *Atlapetes* type whistle songs 5:49. Overlapping all sorts of things. But
no *Agelaius* or *Whitestarts* yet.

6:00. Birds in general about as noisy as yesterday. But probably
moving around somewhat less frequently. Activity increasing 6:05. Yellow-bellied
Tanager moving around.

Visibility is extremely poor!

Birds in general much quieter 6:17. Perhaps a flock has formed
and gone already! If so, I haven't seen it.

Fog lifting a little.

See single *Myiozetetes* alone, 3 ft up in low scrub. Uttering
R's. Then there is a sudden outburst bird sounds both sides of road. Scrub
and bamboo. Obviously a mixed flock assembling! Lots and lots of birds
mulling about in all directions, over area of at least 100 yards square.
All very noisy. Lots of R's, "CN"s, "PN"s, a variety of songs, etc etc.

The group as a whole includes at least the following, at one time
or another: 2 *Pseudospingus*, 2 *Campocopus*, 1 *Budytes cucullatus*,
13 (inc!), 2 "Whitestars" (inc!), 2 Blue & Blacks, 1 Yellow-belly, 2 H.

atropis, & *Coch.* spp. Smiles, Little, YOR *Atropis*, YOR *Atropis*.
 WY *O. magnus*, etc. Yellow-bellied *A. belizae*, & *Syngnathus LXXXI*,
 WY *O. belizae*, etc. & the same species - same one seen yesterday - large dorsal and supracaudal,

For about 10 minutes, the group does not "progress" at all. Birds going in all directions, and many individuals frequently flying away from main body of group and then returning. Gradually a sense of direction asserts itself and whole group drifts slowly down road. At this time, there is no consistent leadership. I saw the following lead at one time or another: H. alpestris, Pl. atlapetes, Pseudospingus, tree creeper, Blue & Black.

At East River, Pr $\frac{1}{2}$ \longrightarrow Pseudospinus Plum capped
 bunches of $\frac{1}{2}$ \longrightarrow atropis eximius

Both the Plum-capped Tanager and the atropineus stick pretty closely to bamboo. (The Plum-capped certainly is bamboo-loving here!) The macrocraterus, "White-lines", and PR Atlapetes stick to low scrub of all types, bamboo and others. These 3 species ranged 1-10 ft above ground. The Butor, litt, Blue & Black, memosopus, Yellow-belly, tree-creeper, and Pseudospingus stick to trees. 10-20 ft up. Pseudospingus more frequently in the very tops of trees than others. The Ruddy Flycatcher probably also spent most of its time in trees. The Flycatcher: LXXXXI, by contrast, tended to stay low in scrub. The PL and the Whitestart ranged all levels. Whitestarts more often high than low. The PL small, medium

The Butorangs ate fairly large green fruits. All the others seem-
ed to be looking for insects (in their usual ways). The Yellow-belly got sever-
al caterpillars.

I did not use the PR again after the first few minutes. Perhaps it

left the group. But all the other centers stayed together.

There was a lot of inter-specific disputing within the group. (I often hear
pruning. Could identify combatants in many cases. But not the other
territors were never involved. Once a Blue & Black chased and app. 1st. It
called a "Whitetrace". Once there was a dispute between a Blue & Black and
a tree creeper. Are Blue & Blacks particularly aggressive here? Is disputing
characteristic of the period when flocks are assembling?

After proceeding down road slowly for a while, group suddenly turn-
ed and went up hill. Probably accelerating at same time (i.e. having achieve
d complete social cohesion.) In distance, I can see that many of the birds have
now gone 30-40 ft up in tops of mature trees.

It is interesting that Blue & Orange Savanagers do not seem to oc-
cur in this area. Altho they did occur in similar environment on Thandi's gro-
ve, and also occur in Alpine scrub only a few KM away here. They must be
unable to compete with some other species in the forest. (No Blue-capped Tan-
ch ??? (Note that the 2 species are not dissimilar in pattern.)

Everything very quiet after flock has gone

Beginning back in 17:10 a.m.

17:16. Going down road a little. Catch glimpses of what seems to be
a pair of B. luteoventris. One on each side of road. Alone. Found like luteover-
ides heard a few days ago. Uttering sharp SHN's.

Whitetails singing occasionally in distance. No diglossini or Altopetes
audible at the time.

Then go up road. Fog lifts partly 17:38. And there is a sudden in-
crease bird sounds. Including Whitetail songs.

Everything unbelievably quiet 8:45 a.m.

19 ft up. The Yellow-bellies and ~~XXXX~~ are medium in "elevation" as well as square. Range 5-20 ft up, in both bushes and trees. The PL(s) range 2-3 ft up, thru all types of vegetation.

The 3 W. Tanager definitely living up near of group. Tend to stick to second growth scrub, 2-3 ft up. At least once, they fought among themselves.

190 When flock first appeared, 1 or 2 Sooty Thrushes went toward it. And moved rather erratically around its outskirts. But apparently they did not stay with it. (The behavior of these Thrushes, in fact, was somewhat reminiscent of "escorting" by *Diglossa* spp.)

The flock passed thru an area where I have seen PR(s) on earlier occasions. And just as this happened, I saw a pair of PR's in very low second growth scrub, 6"-3' above ground, more or less right under the other birds. Apparently, however, they did not follow the flock when it eventually moved on. This is in striking contrast to the behavior of the PL's. The PL's certainly did follow the flock. It is my general impression that PL's are much more strongly allo-gregarious than PR's. (This may be of some theoretical importance in connection with my hypotheses. The PR's here seem to fill much the same ecological niche as the rusinucha in the Quito region. If the PR's here are less gregarious than in some other parts of the Andes, such as the Eastern Cordillera — which seems possible — then their behavior may be compared with that of some species of tanagers and other birds which are non-gregarious in the Quito region and less gregarious here than elsewhere.) The only effect that the presence of this flock seems to have on the PR's is to cause them to "expose" themselves, presumably moving around a little more actively than earlier and

probably rising a little higher in scrub. (I did not see it at this time when flock was not around, but I imagine they were there.) The PR's may "surrender" themselves either because they are "satisfied" to join and follow flock and/or because they want to "erect" the flock & out of their territory.

Laf A Laf and a Cy certainly were with this flock part of the time. Never seen together. But the relations between Diglossini appeared to be somewhat complicated.

Sittis First, the Sittis, after they left the immediate vicinity of Pseudo
spungus, were seen feeding on pink flowers of vine or tall bush growing up trunk of tall mature tree, 30 ft up. This is the same place of plant on which Laf fed a few days ago. Sittis apparently getting nectar from flowers sticking bills into cups. Then Sittis disappear from my view. A few seconds later, a Laf appears in exactly same area. Feeds on flowers. Perhaps exactly same individual flowers. Apparently cutting into bases of corollas in usual Diglossa style. Then Laf disappears from my view. A few seconds later, both Sittis back, feeding on flowers as before. All 3 individuals apparently silent throughout this episode. (Probably I was too far away to be sure of hearing "CN"s or similar notes, but certainly none of the species sang at this time.)

Sittis This incident is important for 2 reasons. It shows that Sittis and Lofs do compete with one another. It also suggests that they have a mutual avoidance - inhibition relationship!!!

Laf Sittis eventually disappear from sight (again). A couple of minutes later, I hear Laf singing about 100 yds away. Go to look for it. Can't actually see it, but it obviously is in mature tree 20-40 ft up.

Cy Presumably hidden by intervening vegetation. Then I see Cy, 20 ft up, feeding in same tree. Apparently looking for insects. I think this Cy cannot be more than 20 ft away from Laf while the latter is singing. Cy remains silent. Whitestarts (not very close by) also are silent at the time. Then Laf shuts up. I imagine that it probably flies away to another tree or bush. A minute or so later, Cy sings a few phrases. Whitestart is still silent. Then Cy shuts up. A minute or so later, Whitestart(s) sing(s) a few phrases. Then shuts up.

Apparently mutual inhibition of song is operative within the Diglossini Social Complex here at this time!

Sitti Laf Cy The Sittis certainly follow flock when it eventually moves off. But I think that the Laf and Cy do not. Some minutes after end of song, I see a single bird, apparently Laf, fly in opposite direction from rest of flock. Into low scrub, where it disappears immediately. A couple of minutes after this, I see a single bird, apparently Cy, fly into same bush. Also disappears.

Sitti Laf Cy Sittis and PL's may have much the same relationship to flocks here. While the relationship of Laf(s) and Cy(s) to mixed flocks may be much the same as that of PR's.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

This flock eventually disappears down hill. So I go walk along the road a little. At 10:35 a.m., 500 yds away, I come across a small group of birds which apparently is an entirely different flock.

XVII 170 Sitti 179 Includes at least 1 B. luteoviridis (this is approximately same area as where same species seen earlier this morning), 1 PL Atlapetes, 1 Sitti, & Whitestarts. Sitti in low scrub and small tree 5-25 ft up. Singing is

(72)

acts off leaves. All other species in scrub 5-15 ft up. Group quiet and moderately dispersed. No obvious indications of leadership.

Leaving 10:50 a.m.

COMMENTS:

I. Inter-specific fighting may be another indication that some of the species here are trying to "break out" of mixed flocks.

Thus, the mixed flocks here, although as large and as highly developed as in any part of the Andes, may show a variety of signs of "incipient decay".

II. The Pseudospingus here (where flocks are common and large) seem to be more strongly passive nuclear than in the Eastern Cordillera (where flocks are less common and/or smaller, on the average). They may be compared with the BCBT's of Chiriqui (where flocks also are common and large). The Pseudospingus of the eastern Cordillera, on the other hand, may be compared with the BCBT's of various parts of the northern Andes. Both species probably illustrate the same general "processes":

Passive Nuclear \rightleftharpoons Active Nuclear \rightleftharpoons Non-nuclear.

May 25, 1965
Papayañ

Going to work along small stream not far from Cauca. (The forest site at the level of Papayañ at which I began work the week before last.) Arrive 5:18 a.m. Still quite dark. Sky partly cloudy. Fairly cool (for this altitude).

First few bird sounds 5:23 a.m. Then quite a variety of sounds 5:30. Nothing immediately recognizable. Some DC.

See single CYR alone 5:48. 20 ft up in tree. Apparently looking for insects. Silent. Some *Thraupis* also flying about alone.

6:03 ♂ & ♀ *Ramphocelus* in top Guaro tree. ♂ utters Q-R type pattern. Voice apparently "heavier" than that of Yellow-rump. Both birds put bills into Guaro flowers. Getting nearer ??? BT lands in same tree, 10 ft away from the *Ramphocelus*. The 2 species seem to pay no attention to one another. BT flies on immediately. *Ramphocelus* flies on some minutes later.

Same tree also is full of hummingbirds chasing one another.

Then all hummingbirds disappear at almost same time. Are they going around in groups ???

See pair BT's alone. Silent. 20 ft up in tree-top.

2 Whitestarts flying alone. One chasing the other. Slate-throats?

Group 3 or 4 BT's moves thru tree tops. Definitely alone.

See single slate throat alone. 30 ft up in tree.

6:28. Single ♀ *Ramphocelus* alone in tree-top.

6:42. See group 4 CYR's alone in tree top. Then see single "Pale-vented Thrush" alone, low (5 ft up), in another tree.

Hear first BT song 6:59. It is obvious that this species is not in breeding condition here now. Nor are any of the other tanagers as far as I can determine.

See ♂ *Ramphocelus* alone (again). Then see single slate throat again. Now but definitely alone. Also more BT's and CYR's alone. Then see single adult *I. hawaii* perched alone top dead tree, 20 ft up.

7:45. Lots more BT's and CYR's alone.

74
Bard? Then see 1 adult bernei, 1 juv. same species, 1 "Pale-vented" Merula
and 1 presumed ♀ Barni, all in same tree. 10-15 ft apart. None of the species paying
any obvious attention to any other.

Leaving 8:05 a.m.

This morning's observations would seem to confirm my previous impressions of this area.